ORDER NO. VRD9703M105

Service Manual

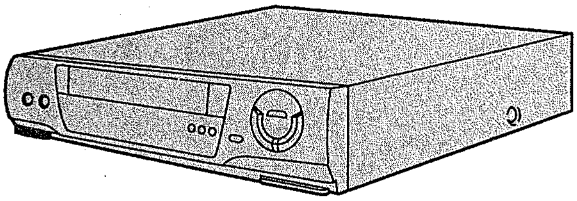
General Description
Adjustment Procedures
Block / Schematic Diagrams
Exploded Views / Parts List

Video Cassette Recorder

Panasonic VHS PAL/NTSC HQ

NV-SD225 AM/AMJ EU
NV-SD220 AM AMJ

Z-MECHANISM



V18108

SPECIFICATIONS

ITEM	SPECIFICATION	
POWER	SOURCE: 110–240 V AC 50/60 Hz	
	CONSUMPTION: 16 watts	
RECORDING SYSTEM	2 rotary heads, helical scanning system	
	PAL/NTSC	
TV TUNER SYSTEM	NV-SD225 AM/AMJ/EU	VHF I : CHE2–CHS3 (PAL B/SECAM B) CH1–CH5 (PAL D/SECAM D, K1) VHF Ⅲ: CHM1–CHS41 (PAL B/SECAM B) CH6–CH12 (PAL D/SECAM D, K1) UHF: CH21—CH69 (PAL G, H, I/SECAM G, K, K1) CH13–CH57 (PAL D) 75Ω terminated
	NV-SD220 AM/AMJ	VHF I : CHE2–CHE4 (PAL B/SECAM B) VHF Ⅲ: CHE5–CHE12 (PAL B/SECAM B) UHF: CH21—CH69 (PAL G) 75Ω terminated
RF OUT SYSTEM	NV-SD225 AM/AMJ/EU	UHF: CH38^{+2}_{-8} (PAL G, H, I/SECAM G, K, K1) CH25^{+2}_{-3} (PAL D) 71±3 dBμ 75Ω terminated
	NV-SD220 AM/AMJ	VHF: CHE3/E4 (PAL B/SECAM B) 71±3 dBμ 75Ω terminated

ITEM	SPECIFICATION	
VIDEO	HEADS:	2 rotary heads 1 pair for recording and playback
	INPUT:	VIDEO IN Connector (Phono type) 1.0 Vp-p, 75Ω terminated
	OUTPUT:	VIDEO OUT Connector (Phono type) 1.0 Vp-p, 75Ω terminated
AUDIO	HEAD:	1 Stationary head (Normal-mono only)
	INPUT:	AUDIO IN Connector (Phono type) –6 dBV (500 mV), more than 50 kΩ
	OUTPUT:	AUDIO OUT Connector (Phono type) –6 dBV (500 mV), Less than 1 kΩ
TAPE SPEED	23.39 mm/s (PAL), 33.35mm/s (NTSC) Record/Playback Time: 4 hours with 240 min. type tape FF/REW Time: 2.5 min. with 180 min. type tape	
OPERATING TEMPERATURE	5°C—40°C	
OPERATING HUMIDITY	35%—80%	
DIMENSIONS	430 (W)×87 (H)×298 (D) mm	
WEIGHT	3.9 kg	
STANDARD ACCESSORIES	1 pc. DIN-RF Cable 1 pc. AC Mains Lead 1 pc. Infra-red Remote Controller 1 pc. AC Plug Adaptor (NV-SD225AM/AMJ, SD220AM/AMJ)	

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

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⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

INTRODUCTION

This service manual contains technical information which will allow service personnels to understand and service this model.

Section 1 presents you with technical know how for actual servicing and general information of features and controls, enabling you to become familiar with each function.

Section 2 presents to your mechanical and electrical adjustment information as well disassembly and replacement procedures.

In the case of very common information relating to other models like mechanical adjustments, please refer to the appropriate service manual.

Section 3 contains block diagrams which provides you with information for checking and understanding each circuit. Schematic diagrams which give you detailed information such as waveforms, voltage data, function e.t.c. ...

Section 4 contains exploded views and parts list.

Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

Note: The Model No. is indicated on the Schematic Diagram and Circuit Board Diagram as follows.

Model No.	NV-SD225AM	NV-SD225AMJ	NV-SD225EU	NV-SD220AM	NV-SD220AMJ
Indication Mark	(A)	(B)	(C)	(D)	(E)

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SECTION 1
GENERAL DESCRIPTIONS

1-1. SERVICE INFORMATION

1-1-1. CHANNEL MEMORY IC INITIALIZATION

When replacing the channel memory IC6007, its IC should be initialized.

Method:
1) Turn Power switch on.
2) Connect a jumper wire twice to TL7506 and TL7507.
3) The channel is disappeared momentarily and channel 1 is going to be indicated in FIP.

Note:
1) It should be performed before tuning.
2) Do not turn off the power source during initialization or 2 seconds after.
3) Meaning of "INITIALIZATION" is to make dependency in different models and to distinguish between different features.
4) After terminating the initialization, when the power switch is turned off and on, ATP (Automatic Tuning Preset) starts.

1-1-2. SERVICE POSITION

CHECKING OF MAIN C.B.A.

When servicing the MAIN C.B.A., take out the MAIN C.B.A. and mechanism from the frame and turn over.

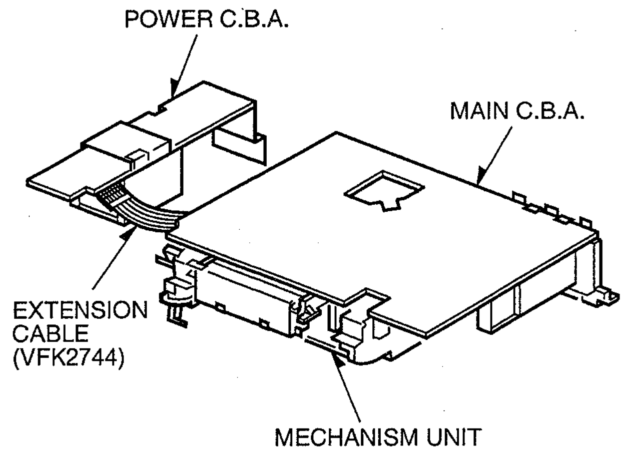


Fig. S1

1-1-3. CHANNEL PLAN FOR DIRECT TUNING

NV-SD225AM/AMJ, SD220AM/AMJ Channel Plan corresponds with the local channel plan and NV-SD225EU does not have Direct Tuning function so that the Channel Plans do not exist.

1-1-4. REMOVAL OF CASSETTE TAPE

There are 2 ways to remove a cassette tape.
1. Removal of compulsory loading.
   (1) Press FF, REW and EJECT buttons simultaneously and set the Service Mode 7.
   (2) Press STOP button in order to unload the mechanism. (Pay an attention of tape slag)
   Service Mode Indication :
   7 ※※ ※※ (STOP) → 7 00 ※※ (EJECT)
2. Removal of manual operation of Main cam gear.
   (1) Disconnect the AC power cord and remove Top Panel.
   (2) Rotate Main cam gear to the clockwise and unload the mechanism (Tape is remaining).
3. Rotate the Pole of Capstan motor to the clockwise from the bottom in order to remove the tape slag.
4. Rotate Main cam gear to the clockwise in order to eject the cassette tape.

1-1-5. CYLINDER UNIT REPLACEMENT

A. CYLINDER UNIT REPLACEMENT

1) Remove the 3 Screws (A) of the CYLINDER UNIT with a magnetized screw driver.

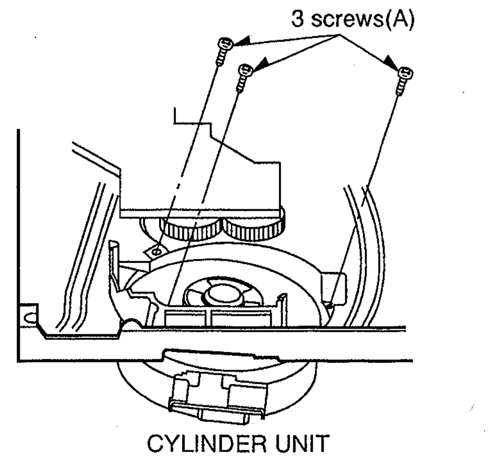


Fig. S2

B. UPPER CYLINDER DISASSEMBLY

1) Remove 2 screws (A).
2) Remove the Cylinder Stator Unit.
3) Remove 2 screws (B).
4) Remote the Cylinder Rotor Unit.
5) Loose hex screw (C) (1.5mm) and remove the Cylinder Retainer.
6) Remove the Upper Cylinder.

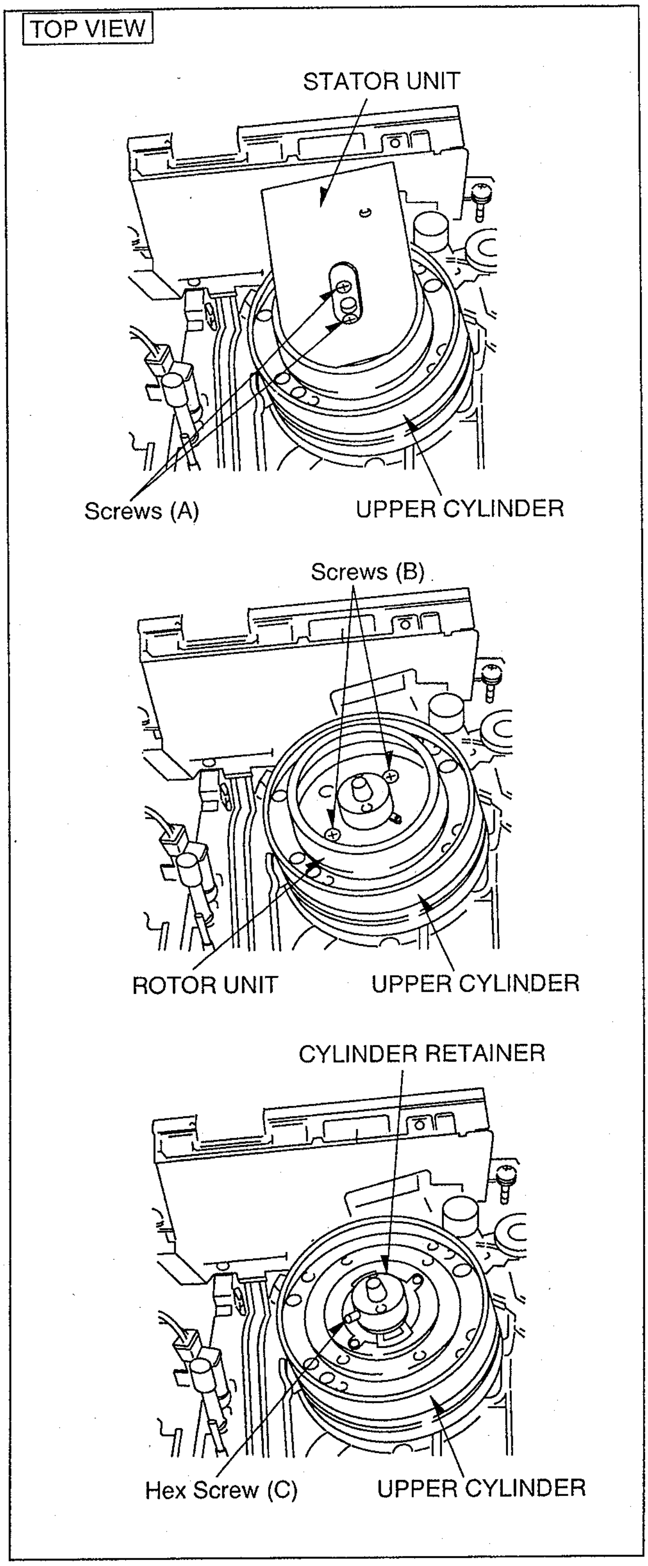

TOP VIEW
STATOR UNIT
Screws (A)
UPPER CYLINDER
Screws (B)
ROTOR UNIT
UPPER CYLINDER
CYLINDER RETAINER
Hex Screw (C)
UPPER CYLINDER

Fig. S3

C. UPPER CYLINDER ASSEMBLY

When reassembling, perform the steps in the reverse order.

1) Install the Cylinder Retainer so that the 2 holes on top of the Cylinder Retainer are at right angles with the Head Amp Shield.
2) Tighten the hex screw (C) (1.5mm) while pressing down on top of the Cylinder Retainer.

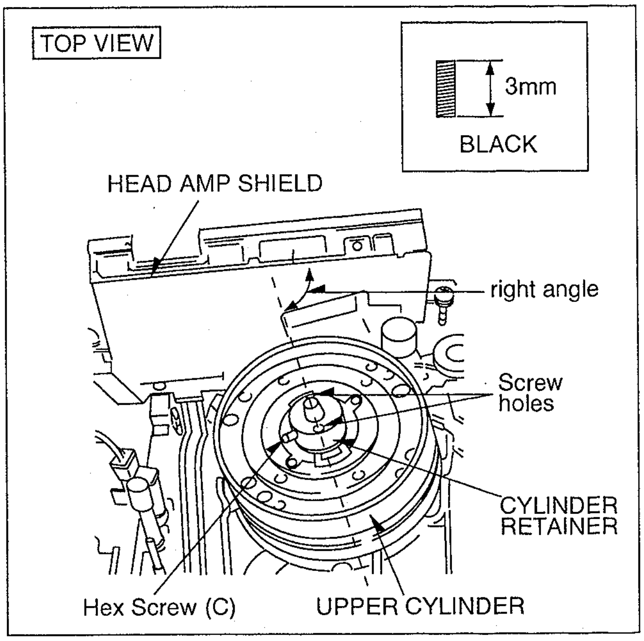

TOP VIEW
3mm
BLACK
HEAD AMP SHIELD
right angle
Screw holes
CYLINDER RETAINER
Hex Screw (C)
UPPER CYLINDER

Fig. S4

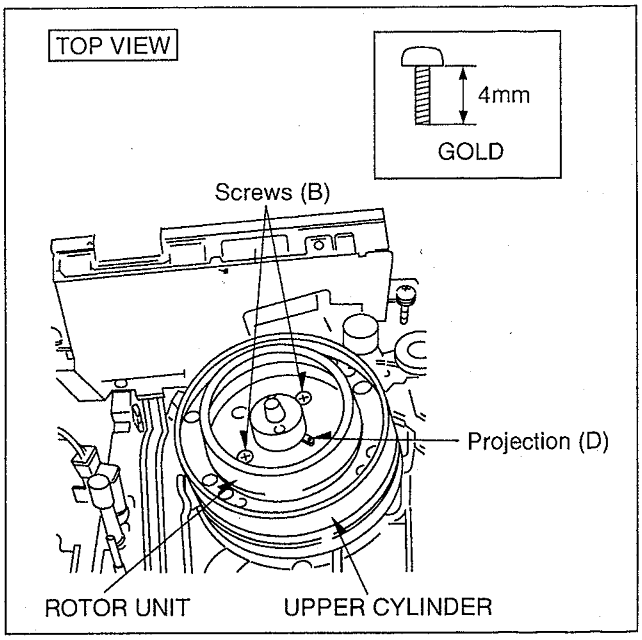

TOP VIEW
4mm
GOLD
Screws (B)
Projection (D)
ROTOR UNIT
UPPER CYLINDER

Fig. S5

3) Install the Cylinder Rotor Unit so that the inner hole of the Cylinder Rotor Unit fits to the small projection (D) on top of the Upper Cylinder.
4) Tighten 2 screws (B).
5) Install the Cylinder Stator Unit so that the rear side of the Cylinder Stator C.B.A. is parallel with the Head Amp Shield.
6) Tighten 2 screws (A).
7) Confirm the PG SHIFTER ADJUSTMENT with the alignment tape (PAL: VFJ8125H3F/NTSC: VFM8080HQFP) and adjust it if necessary.

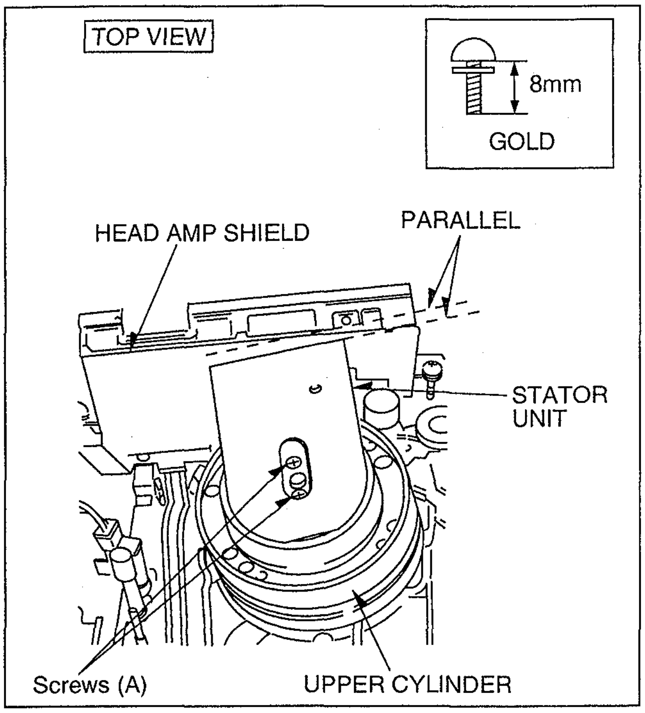


Fig. S6

1-2. CAUTION DURING AUTO TUNING

PROCEDURE

Auto Tuning will start by the following procedure.

1. Connect the DIN-RF Cable.
2. Connect the AC Mains Lead.
3. Turn on the VCR.
   Auto Tuning will start.
   Auto Tuning searches for TV stations from VHF minimum to UHF maximum and memorizes every tuned program position. Other program positions are skipped.
   Auto Tuning takes seven or more minutes to complete its search.
   Do not touch the VCR during Auto Tuning.
   Auto Tuning will stop halfway, if the VCR is operated or the aerial lead and/or the mains lead are disconnected.
   In case the VCR stopped during Auto Tuning, the VCR have to be reset and restarted.
   See the following item 2.

NOTE

1. If the VCR is turned on with the antenna not connected, all channels are skipped. Therefore, firmly connect the antenna and then turn the VCR off and on again to execute Auto tuning.
2. **When Auto Tuning is canceled halfway, Auto Tuning is not executed even if the VCR is turned off and then turned on again.**
   In this case, Auto Tuning have to be restarted by the following procedure.
   (1) Press EJECT and remove the Video cassette.
   (2) Keep ∧ and ∨ (UP/DOWN) on the VCR pressed simultaneously for 3 seconds or more during the VCR on.
   The channel displayed on the VCR display disappears for a moment then changes to 1.
   (3) Turn off the VCR and then turn it on. Auto Tuning commences.
3. If you turn the VCR off during Auto Tuning, Auto Tuning will stop halfway.
   The VCR should be reset and restarted by the item 2 in order to execute Auto Tuning.
4. If the VCR starts playback during Auto Tuning, Auto Tuning will stop halfway.
   The VCR should be reset and restarted by the item 2 in order to execute Auto Tuning.
5. To cancel Auto Tuning Mid-operation, press POWER during Auto Tuning (The VCR is turned off).
6. When the VCR is moved to the other area or country, TV broadcasts should be stored again.

1-3. SELF-TEST INDICATION DISPLAY

Refer to the Service Manual for Z Mechanical Chassis.

1-4. SERVICE INFORMATION DISPLAY

Refer to the Service Manual for Z Mechanical Chassis.

1-5. TIMER REFERENCE CLOCK

In case of the following repair services (parts replacement) have been provided, Timer Reference Clock have to be adjusted due to the adjustment value changes so that the accuracy of the time can be warranted.

a) Crystal Oscillator (X6001) has been replaced.

b) E2PROM (IC6007) has been replaced.

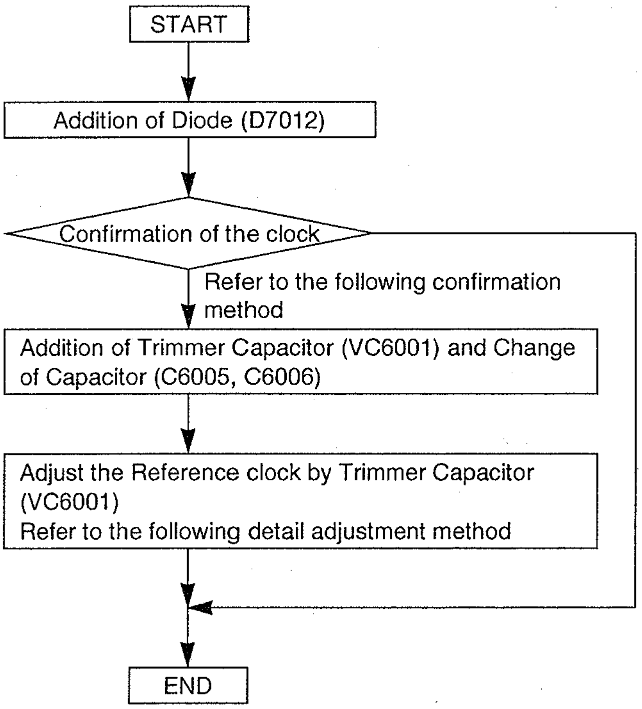
It does not need to perform the adjustment when the microprocessor of system control (IC6001) is replaced.

PROCEDURE OF TIMER REFERENCE CLOCK ADJUSTMENT

The following parts have to be added and changed before starting the adjustment in order to enable the confirmation and/or adjustment.

Parts List

Ref. No.	Current Parts No.	New Parts No.	Description
D7012	—	MA165	DIODE
VC6001	—	ECRHA030E54R	TRIMMER CAPACITOR
C6005-06	ECUM1H150JCN	ECUM1H100DCN	CAPACITOR


START
Addition of Diode (D7012)
Confirmation of the clock
Refer to the following confirmation method
Addition of Trimmer Capacitor (VC6001) and Change of Capacitor (C6005, C6006)
Adjust the Reference clock by Trimmer Capacitor (VC6001)
Refer to the following detail adjustment method
END

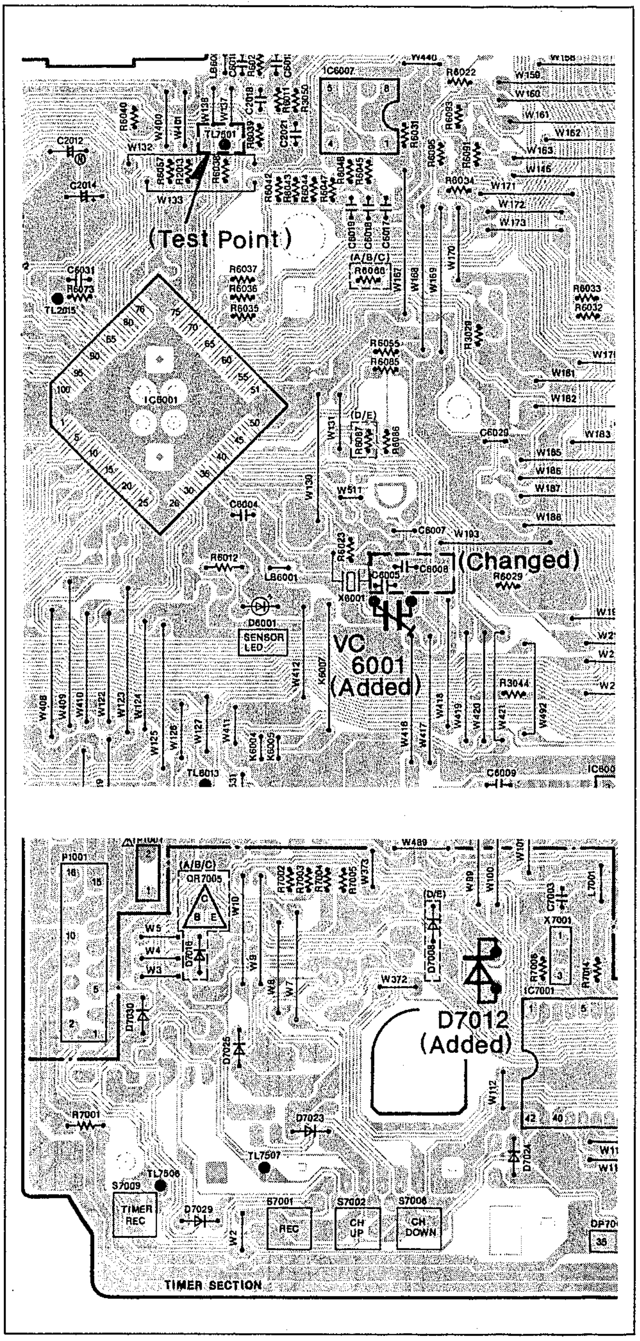

(Test Point)
TL7501
IC6001
IC6007
(Changed)
X6001
VC 6001 (Added)
SENSOR LED
D7012 (Added)
TL7507
TIMER REC
REC
CH UP
CH DOWN
TIMER SECTION

Fig. T1

Confirmation method

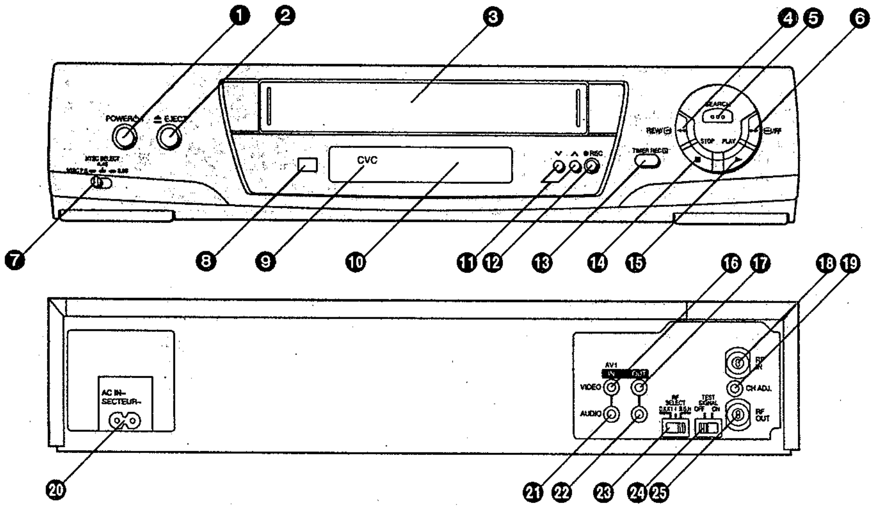
1. Connect the Frequency Counter to TL7501.
2. Confirm that the frequency is 7812.5+–0.03 (us) in STOP mode.

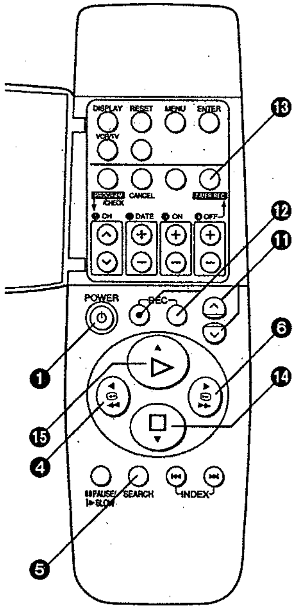
Adjustment method

1. Connect the Frequency Counter to TL7501.
2. Adjust VC6001 until the frequency is 7812.5+–0.03 (us) in STOP mode.

Controls and Connection Sockets

This section describes in detail the function of each button, switch and connection socket.





FRONT

① **POWER ⏻/I**
Press to switch the VCR from on to standby mode or vice versa. In standby mode, the VCR is still connected to the mains.

② **EJECT**
Ejects a video cassette.

③ **Cassette Compartment**
Insert a video cassette here.

④ **REW (REWIND)**

In the stop mode:	Rewinds the tape.
In the playback mode:	Searches back.
In the rewind mode:	Obtains a high speed picture.

"◁◁" is lit.

⑤ **SEARCH**
Searches a recorded programme using the intro-jet scan function.

⑥ **FF (FAST FORWARD)**

In the stop mode:	Fast forwards the tape.
In the playback mode:	Searches forward.
In the fast forward mode:	Obtains a high speed picture.

"▷▷" is lit.

⑦ **NTSC SELECT**
Set according to the colour TV system.

NTSC P.B.:	For TVs that can receive PAL signals. The output signal is the quasi-PAL system.
4.43:	When receiving NTSC 4.43 signals. For TVs that can receive NTSC 4.43 signals.
3.58:	When receiving NTSC 3.58 signals. For TVs that can receive NTSC 3.58 signals.

⑧ **Infra-red Remote Control Receiver Window**

⑨ **CVC (Crystal View Control) Indicator**
This indicator is normally lit when the VCR is on.

⑩ **Display**

⑪ **∨ ∧**
Selects the required programme position (TV station) of the VCR.

For tracking adjustment and vertical locking adjustment

- For manual tracking adjustment
  The ∨ and ∧ buttons are used to adjust the tracking when, for example, noise bars on the picture are better removed manually than by automatic digital tracking control. After making a manual adjustment, press both buttons together to return to automatic digital tracking control.
- For slow tracking adjustment
  When noise bars appear during still or slow playback, switch over to slow playback and adjust with the ∨ or ∧ button to reduce the noise bars.
- For vertical locking adjustment
  Use the ∨ and ∧ buttons to minimize any vertical jitter during still picture playback.

⑫ **REC**
Starts recording.

- Press both buttons simultaneously for the remote controller.

⑬ **TIMER REC**
Turns the timer recording function on and off.
⏲ is lit or not lit.
Once you operate the timer recording function, normal VCR operation is not possible unless you press this button again and release the VCR from the timer recording standby mode.

⑭ **STOP**
Stops playback or recording.
Ejects the video cassette.

⑮ **PLAY**
Starts playback.
"▷" is lit.
For the repeat playback function.

REAR

⑯ **VIDEO IN**
Connects a video cable from a movie camera or another video recorder.

⑰ **VIDEO OUT**
Connects a video cable to a TV or another video recorder.

⑱ **RF IN**
Connects the external aerial.

⑲ **CH ADJ.**
Adjusts RF transmitting channel E30–40 (C22–27).

⑳ **AC IN~**
Connects the main power supply.

㉑ **AUDIO IN**
Connects an audio cable from a movie camera or another video recorder.

㉒ **AUDIO OUT**
Connects an audio cable to a TV or another video recorder.

㉓ **RF SELECT**
Selects the colour TV system used by the TV to be connected.

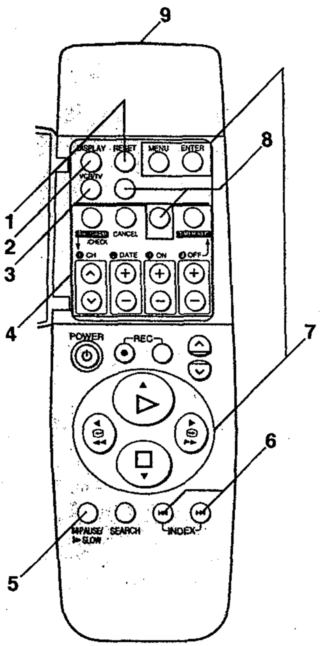
D.K.K1:	PAL D/SECAM D.K.K1
I:	PAL I
B.G.H:	PAL B.G.H/SECAM B.G

㉔ **TEST SIGNAL**
The test signal is transmitted on channel E38 or C25.

㉕ **RF OUT**
Connects the aerial terminal on a TV.

Infra-red Remote Controller

The remote control unit for this VCR is a universal remote controller. As such, some of its buttons are not used to operate this VCR.



1 RESET
Resets the tape counter (elapsed time) to "0:00.00".
- The tape counter is automatically reset to "0:00.00" when a video cassette is inserted.

2 DISPLAY
Changes the indication on the VCR display or on screen display as follows.
→Clock→Counter

3 VCR/TV
This button is not used to operate this VCR.

4 Timer Recording Operation Buttons

PROGRAM/CHECK
Sets and checks timer programmes.

CANCEL
Cancels the settings made for timer recording.

TIMER REC
Turns the timer recording function on and off.
⏲ is lit or not lit.
Once you operate the timer recording function, normal VCR operation is not possible unless you press this button again and release the VCR from the timer recording standby mode.

CH, DATE, ON, OFF
Programmes timer recording.

5 PAUSE/SLOW
During playback:
- By pressing: Still picture. "▯▯" is lit.
- By pressing for 2 seconds or more: Slow playback. "▯▷" is lit.

During recording: Interrupts recording.

6 INDEX
Used for the index search function.

7 On Screen Display Menu Operation Buttons
The buttons written by green characters are used for the on screen display menu operation.

MENU
Makes the on screen display main menu appear on the TV screen.

ENTER
Confirms the selection, or stores.

▲ ▼ ◀ ▶
Makes selections from the on screen display.
- These buttons can also be used for playback, stop, rewind and fast forward mode.

8 These buttons are not used to operate this VCR.

9 Infra-red Transmitter

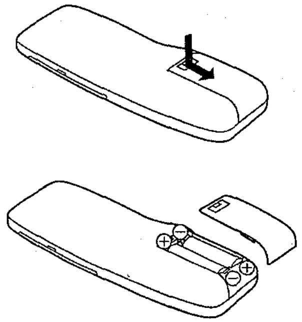
Power Source for the Remote Controller

The remote controller is powered by 2 "AA", "UM3" or "R6" size batteries. The life of the batteries is about one year, although this depends on the frequency of use.

Precautions for Battery Replacement

- Load the new batteries with their polarity (⊕ and ⊖) aligned correctly.
- Do not apply heat to the batteries, or an internal short circuit may occur.
- If you do not intend to use the remote controller for a long period of time, remove the batteries and store them in a cool and dry place.
- Remove spent batteries immediately and dispose of them.
- Do not use an old and a new battery together, and never use an alkaline battery with a manganese battery.

Installing the Batteries



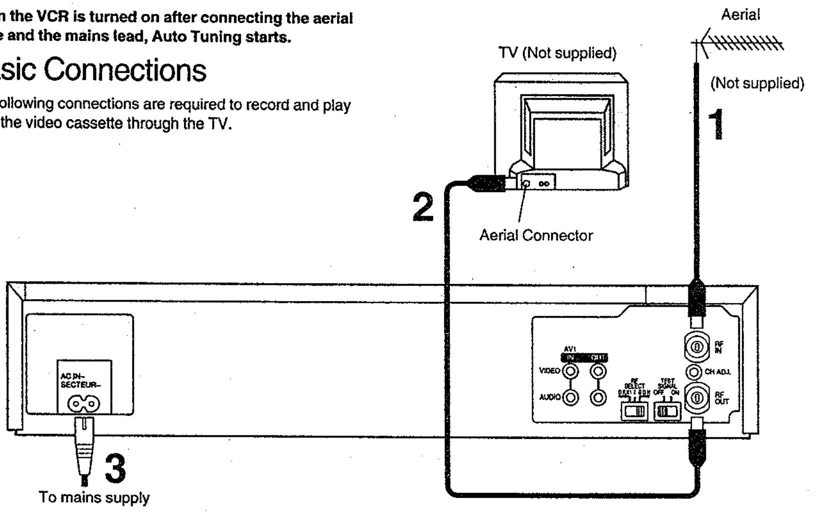
Connections

This section shows you how to connect the VCR to an aerial, TV, etc.

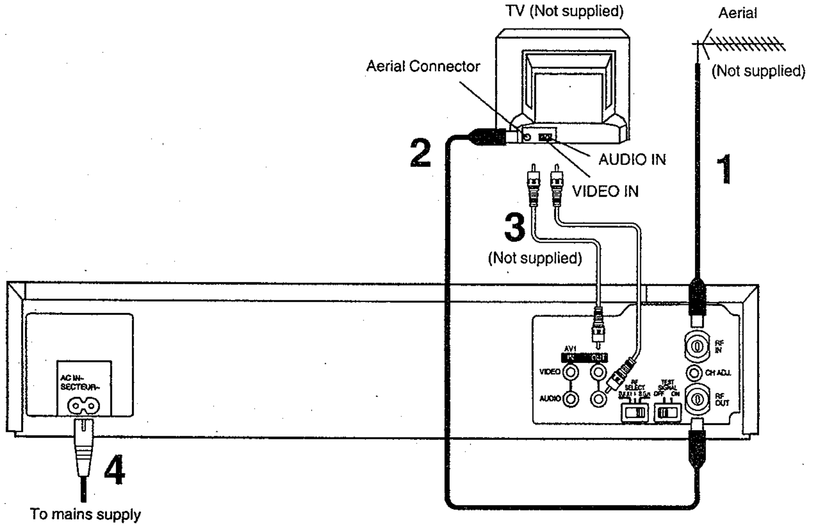
When the VCR is turned on after connecting the aerial cable and the mains lead, Auto Tuning starts.

Basic Connections

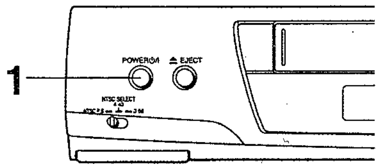
The following connections are required to record and play back the video cassette through the TV.

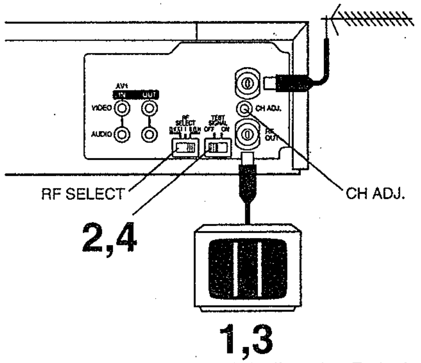

Aerial
TV (Not supplied)
(Not supplied)
1
2
Aerial Connector
AV1
IN
OUT
VIDEO
AUDIO
RF SELECT
TEST SIGNAL
OFF ON
RF IN
CH ADJ.
RF OUT
AC IN-SECTEUR~
3
To mains supply

Connection to a TV using the Audio/Video Input Sockets


TV (Not supplied)
Aerial
Aerial Connector
(Not supplied)
2
AUDIO IN
VIDEO IN
1
3
(Not supplied)
AV1
IN
OUT
VIDEO
AUDIO
RF SELECT
TEST SIGNAL
RF IN
CH ADJ.
RF OUT
AC IN-SECTEUR~
4
To mains supply

Tuning the TV to your VCR


1
POWER/I
EJECT
NTSC SELECT


AV1
IN
OUT
VIDEO
AUDIO
RF SELECT
TEST SIGNAL
CH ADJ.
RF OUT
RF SELECT
CH ADJ.
2,4
1,3

The VCR supplies a signal to the TV via the RF coaxial cable on channel E38 or C25.
It is possible to view the video picture on your TV in the same way that you watch TV broadcasts.
If you have connected the VCR to the TV through the video and audio input sockets, then you do not need to follow the procedure below.
When the VCR is turned on after connecting the aerial cable and the mains lead, Auto Tuning starts.

Notes:

- If the VCR is turned on with the antenna not connected, all channels are skipped. Therefore, firmly connect the antenna and then turn the VCR off and on again to execute Auto Tuning.
- When Auto Tuning is cancelled halfway, Auto Tuning is not executed even if the VCR is turned off and then turned on again. In this case, see page 10 **"To restart Auto Tuning"**.

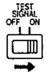
Operations

1

Turn on the TV and the VCR.
Ensure that the VCR is connected to the aerial cable.

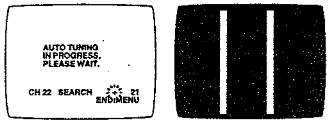
- Auto Tuning starts. (See next page.)

2


TEST SIGNAL
OFF ON

To generate a test pattern, set **TEST SIGNAL** to ON.

3 **On Screen display**


AUTO TUNING
IN PROGRESS,
PLEASE WAIT.
CH 22 SEARCH 21
END:MENU

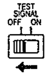
(During Auto Tuning)

Test Pattern
(After Auto Tuning)

Set the TV to an unused position which you wish to use for your video playback.

- Tune the TV until the test pattern appears on the screen.
- During Auto Tuning, the test pattern screen does not appear, and the Auto Tuning screen appears instead.

4


TEST SIGNAL
OFF ON

Set **TEST SIGNAL** to OFF.

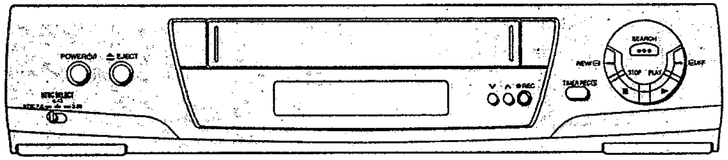
Note:
The test signal is transmitted on video channel E38 (B.G.H.I.K.K1) or C25 (CHINA). If you are encountering interference from a TV broadcast on this video channel, you may readjust to another free channel (E30–40, C22–27) by turning the **CH ADJ.** screw located on the rear of the VCR.
When rotating the **CH ADJ.** screw, take care not to turn it too far.
Note that if the **CH ADJ.** screw is used, then you will have to retune your TV to the test signal following steps **2–4** above.

RF Selector (RF SELECT)
Use the **RF SELECT** to select the colour TV system used by the TV set to be connected.

D.K.K1:	PAL D/SECAM D.K.K1
I:	PAL I
B.G.H:	PAL B.G.H/SECAM B.G

- When **NTSC SELECT** on the front panel is at the 3.58 position during NTSC playback or recording NTSC signal, the NTSC 3.58 system will be selected regardless of the position of the **RF SELECT.**

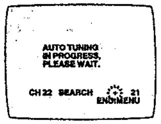
Storing TV Broadcasts in your VCR


POWER⏻/I
≜ EJECT
NTSC SELECT
SEARCH
REW
STOP
PLAY
FF
TIMER REC/OTR
∨ ∧ ●REC

Auto Tuning

When the VCR is turned on after connecting the aerial cable and the mains lead, Auto Tuning starts.

On Screen Display


AUTO TUNING IN PROGRESS, PLEASE WAIT.
CH 22 SEARCH 21
END:MENU

Auto Tuning searches for TV stations from VHF minimum to UHF maximum and memorizes every tuned programme position.

- If you turn the VCR off during Auto Tuning, Auto Tuning will stop halfway.
- If the VCR starts playback during Auto Tuning, Auto Tuning will stop halfway.

To Cancel Auto Tuning Mid-Operation:

Press **POWER ⏻/I** during Auto Tuning. The VCR is off, and Auto Tuning is canceled.

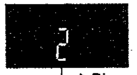
To restart Auto Tuning:

1 Press **EJECT** and remove the video cassette.

2 Keep ∨ and ∧ on the VCR pressed simultaneously for 3 seconds or more during the VCR on.

- The channel displayed on the VCR display disappears for a moment then changes to 1.

Display Symbol



Disappears→1

3 Turn off the VCR and then turn it on.
- Auto Tuning commences.

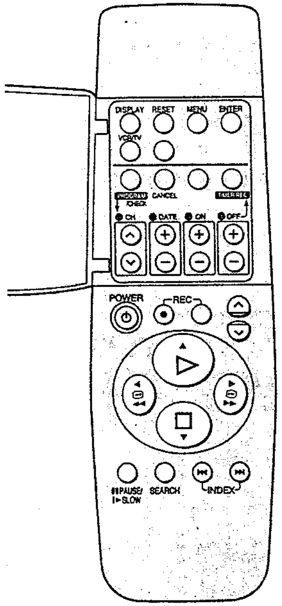
Auto Tuning with the On Screen Display

Introduction

The VCR is fitted with its own tuner (just like a normal TV) and can be preset to receive up to 99 TV broadcast stations.

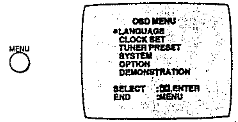
Preparations

- Confirm that the TV is on and the VCR viewing channel is selected.
- Turn on the VCR and select any programme position except AV.


DISPLAY
RESET
MENU
ENTER
VCR/TV
PROGRAM
CANCEL
TIMER REC
CHECK
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX

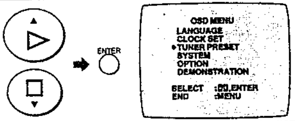
Operations **On Screen Display**

1


MENU
OSD MENU
●LANGUAGE
CLOCK SET
TUNER PRESET
SYSTEM
OPTION
DEMONSTRATION
SELECT :▢▢,ENTER
END :MENU

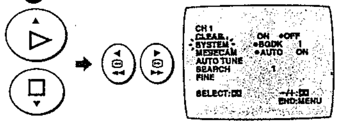
Press **MENU**.

2


ENTER
OSD MENU
LANGUAGE
CLOCK SET
●TUNER PRESET
SYSTEM
OPTION
DEMONSTRATION
SELECT :▢▢,ENTER
END :MENU

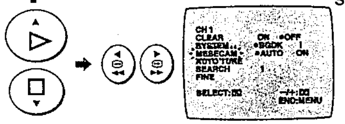
Select **TUNER PRESET**.

3


CH 1
CLEAR ON ●OFF
SYSTEM ●BGDK 1
MESECAM ●AUTO ON
AUTO TUNE
SEARCH 1
FINE
SELECT:▢▢
−/+:▢▢
END:MENU

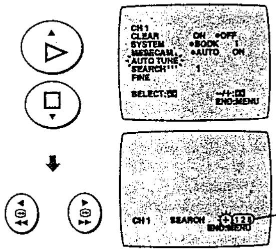
Select **SYSTEM** and select the desired broadcasting system.

4


CH 1
CLEAR ON ●OFF
SYSTEM ●BGDK 1
MESECAM ●AUTO ON
AUTO TUNE
SEARCH 1
FINE
SELECT:▢▢
−/+:▢▢
END:MENU

Select **MESECAM** and select **AUTO**.

5


CH 1
CLEAR ON ●OFF
SYSTEM ●BGDK 1
MESECAM ●AUTO ON
AUTO TUNE
SEARCH 1
FINE
SELECT:▢▢
−/+:▢▢
END:MENU
CH 1 SEARCH 125
END:MENU

Select **AUTO TUNE** and press ◀ or ▶.

- When Auto Tuning is completed, the on screen display disappears and programme position 1 is selected.
- After Auto Tuning, reset **SYSTEM** to BGDK or I for a PAL broadcast.
- Number of item **CH** may be different from one of item **SEARCH**.

These are general guidelines to the completion of tuning.

Notes:

- Auto Tuning searches for TV stations from VHF minimum to UHF maximum and memorizes every tuned programme position. Other programme positions are skipped.
- Auto Tuning takes seven or more minutes to complete its search.
- At every programme position, **SYSTEM** and **MESECAM** settings are set to the same settings selected in step **3** and **4**.
- If the VCR is not correctly tuned by Auto Tuning, follow the procedure on the next page.

1—9

Manual System Setting Procedure

1 Select desired programme position by pressing ∨ or ∧.
2 Press **MENU**.
3 Select **TUNER PRESET** by pressing ▲ or ▼ and **ENTER**.
4 Select **SYSTEM** by pressing ▲ or ▼ and then select the broadcasting system by pressing ◀ or ▶.
   - •BGDK: For receiving PAL B.G.H.D or SECAM B.G.D.K.K1 system broadcasts.
   - •I: For receiving PAL I system broadcasts.
5 Press **MENU** twice.

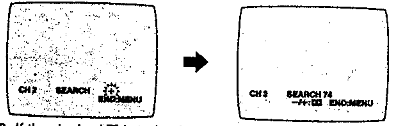
Manual MESECAM Setting Procedure

1 Select desired programme position by pressing ∨ or ∧.
2 Press **MENU**.
3 Select **TUNER PRESET** by pressing ▲ or ▼ and **ENTER**.
4 Select **MESECAM** by pressing ▲ or ▼ and then select **ON** by pressing ◀ or ▶.
5 Press **MENU** twice.

Manual Tuning Procedure

1 Press **MENU**.
2 Select **TUNER PRESET** by pressing ▲ or ▼ and **ENTER**.
3 Select **CH** by pressing ▲ or ▼ then select the channel number you want tuned by pressing ◀ or ▶.
4 Confirm that **CLEAR** is set to **OFF**.
5 Select **SYSTEM** by pressing ▲ or ▼ and then select the broadcasting system by pressing ◀ or ▶.
   - •BGDK: For receiving PAL B.G.H.D or SECAM B.G.D.K.K1 system broadcasts.
   - •I: For receiving PAL I system broadcasts.
6 Select **MESECAM** by pressing ▲ or ▼ and then select **AUTO** by pressing ◀ or ▶.
   - •The VCR automatically distinguishes between PAL and SECAM broadcasts.
   - •If the picture lacks colour when **AUTO** is selected, select **ON**.
7 Select **SEARCH** by pressing ▲ or ▼ then press ◀ or ▶.

On Screen Display

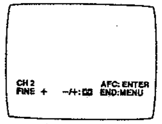

CH 2 SEARCH +
END:MENU
CH 2 SEARCH 74
−/+:◀▶ END:MENU

8 If the desired TV station has not been tuned, press ◀ or ▶ again.

- •Press **MENU** and repeat steps **3–8** for each programme position you want to tune to a station.
- •To exit, press **MENU** three times.

Fine Tuning Procedure

1 Press **MENU**.
2 Select **TUNER PRESET** by pressing ▲ or ▼ and **ENTER**.
3 Select **CH** by pressing ▲ or ▼ then select the programme position by pressing ◀ or ▶.
4 Select **FINE** by pressing ▲ or ▼.
5 Press ◀ or ▶ to obtain the best tuning condition.


CH 2
FINE +
−/+:◀▶
AFC: ENTER
END:MENU

- •To return the tuning to its former state, press **ENTER**.

6 Press **MENU**.

Blanking of Unused Programme Positions

1 Press **MENU**.
2 Select **TUNER PRESET** by pressing ▲ or ▼ and **ENTER**.
3 Select **CH** by pressing ▲ or ▼ then select the programme position by pressing ◀ or ▶.
4 Select **CLEAR** by pressing ▲ or ▼.
5 Select **ON** by pressing ◀ or ▶.
   - •Repeat steps **3–5** for other unused programme positions to skip during the selection of programme positions.
   - •To cancel the blanking of a programme position, select that programme position then select **CLEAR OFF**.
6 Press **MENU** twice.

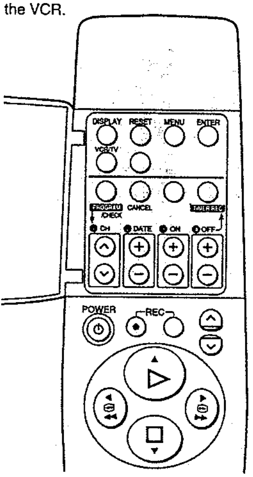
Channels that can be Received

SYSTEM		VHF	CATV	UHF
BGDK	**CCIR STD (B.G.H)**	E2–E12	S01–S05 M1–M10 U1–U10 S21–S41	21–69
	CHINA (D)	1–12	Z1–Z35	13–57
	EAST EU (D.K.K1)	1–12	44–470 MHz	21–69
I	**HONG KONG, UK (I)**	——		21–69

Language Setting of the On Screen Display

Preparations

- •Confirm that the TV is on and the VCR viewing channel is selected.
- •Turn on the VCR.

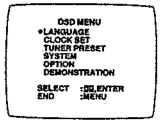

DISPLAY
RESET
MENU
ENTER
VCR/TV
CANCEL
CH
DATE
ON
OFF
POWER
REC

To Select the Desired Language

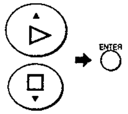
Select one of the two languages displayed: English and Russian.

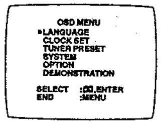
1 Press **MENU**.

On Screen Display

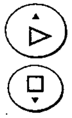

OSD MENU
•LANGUAGE
CLOCK SET
TUNER PRESET
SYSTEM
OPTION
DEMONSTRATION
SELECT :◀▶,ENTER
END :MENU

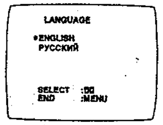
2 Select **LANGUAGE**.




OSD MENU
•LANGUAGE
CLOCK SET
TUNER PRESET
SYSTEM
OPTION
DEMONSTRATION
SELECT :◀▶,ENTER
END :MENU

3 Select the desired language.

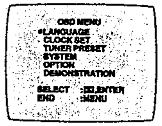



LANGUAGE
•ENGLISH
РУССКИЙ
SELECT :◀▶
END :MENU

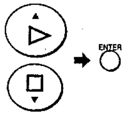
4 Press **MENU** twice.

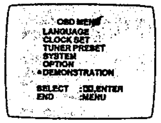
To Demonstrate the OSD Menu

1 Press **MENU**.


OSD MENU
•LANGUAGE
CLOCK SET
TUNER PRESET
SYSTEM
OPTION
DEMONSTRATION
SELECT :◀▶,ENTER
END :MENU

2 Select **DEMONSTRATION**.



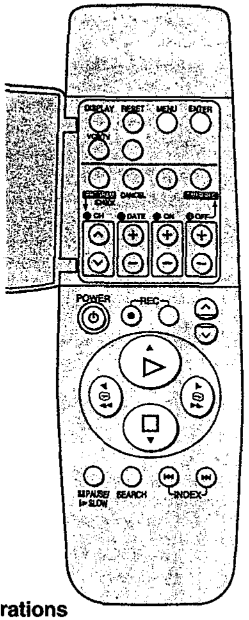

OSD MENU
LANGUAGE
CLOCK SET
TUNER PRESET
SYSTEM
OPTION
•DEMONSTRATION
SELECT :◀▶,ENTER
END :MENU

- •During the demonstration mode, all the on screen displays are displayed one after the other at about five second intervals.

3 Press **MENU** to stop the demonstration.

Note:
The menu screen has a blue background. However, if there is no signal input while AV is selected, the menu screen may change to black and white when **MENU** is pressed. This does not indicate a malfunction. If it happens, either input a signal or select another programme position.

Settings Using the On Screen Display


DISPLAY
RESET
MENU
ENTER
POWER
REC
PAUSE/SLOW
SEARCH
INDEX

Preparations

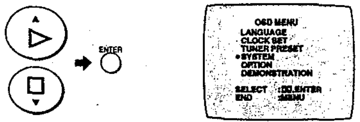
- Confirm that the TV is on and the VCR viewing channel is selected.
- Turn on the VCR.

To set the Colour TV System

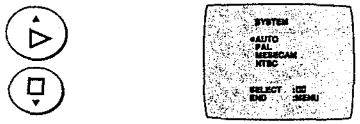
1 Press **MENU**.

2 Select **SYSTEM**.

On Screen Display


ENTER
OSD MENU
LANGUAGE
CLOCK SET
TUNER PRESET
●SYSTEM
OPTION
DEMONSTRATION
SELECT :⊡,ENTER
END :MENU

3 Select **AUTO**.


SYSTEM
●AUTO
PAL
MESECAM
NTSC
SELECT :⊡
END :MENU

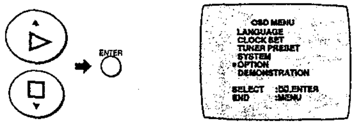
- The VCR automatically distinguishes between PAL, SECAM/MESECAM and NTSC signals. If the picture lacks colour during AV external recording or playback, set to **PAL**, **MESECAM** or **NTSC**.

4 Press **MENU** twice to make the on screen display disappear.

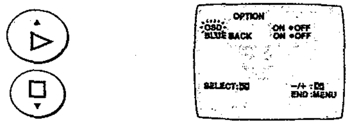
On Screen Display

1 Press **MENU**.

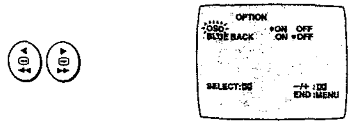
2 Select **OPTION**.


ENTER
OSD MENU
LANGUAGE
CLOCK SET
TUNER PRESET
SYSTEM
●OPTION
DEMONSTRATION
SELECT :⊡,ENTER
END :MENU

3 Select **OSD**.


OPTION
OSD ON ●OFF
BLUE BACK ON ●OFF
SELECT:⊡
−/+ :⊡
END :MENU

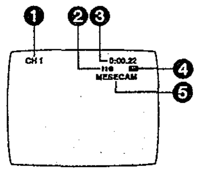
4 Select **ON** or **OFF**.


OPTION
OSD ●ON OFF
BLUE BACK ON ●OFF
SELECT:⊡
−/+ :⊡
END :MENU

ON: The on screen display will appear on the TV screen.
OFF: The on screen display will not appear.

5 Press **MENU** twice to make the on screen display disappear.

To use the on screen display:


❶
❷
❸
❹
❺
CH 1
0:00.22
MESECAM

❶ **Programme position**

❷ **Tape running display**

Stop, Eject	
Rewind, Review	◀◀
Fast forward, Cue	▶▶
Playback	▶
Still playback	❚❚
Recording	●
Recording pause	❚❚●
Slow playback	❚▶
Repeat playback	R ▶

❸ **Present time/Tape counter/Index search**

Information	Display
Present time	17:24
Tape counter	−2:35.47
Index search	S 01

❹ **Cassette-in indicator**

❺ **Colour system indicator**

The colour TV system selected appears during normal playback. (See page 14.)

- When **AUTO** is selected on **SYSTEM** on screen display, no indicator appear.

When **MESECAM** of **TUNER PRESET** is **ON** (see page 11), **MESECAM** indicator appears.

Notes:

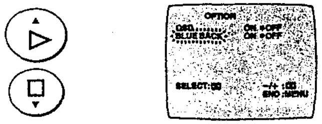
- The on screen display may be disturbed or disappear during special playback.
- The on screen display does not appear when the **OSD** is set to OFF. Set the **OSD** to OFF for dubbing.
- The **OSD** is set to OFF when the VCR is purchased. The setting returns to OFF when the VCR is turned off.

For the Blue Background Function

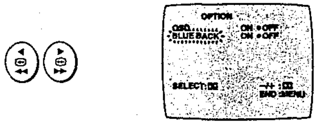
When **BLUE BACK** is **ON**, the screen will always have a blue background when no signal is received or the received signal is very weak.
Follow steps **1** to **2** of the right on page 14.

3 Select **BLUE BACK**.

On Screen Display


OPTION
OSD ON ●OFF
BLUE BACK ON ●OFF
SELECT:⊡
−/+ :⊡
END :MENU

4 Select **ON** or **OFF**.


OPTION
OSD ON ●OFF
BLUE BACK ON ●OFF
SELECT:⊡
−/+ :⊡
END :MENU

- When **BLUE BACK** is **OFF**, the blue background function is deactivated.
- It is not possible to record the blue picture of the blue background function.

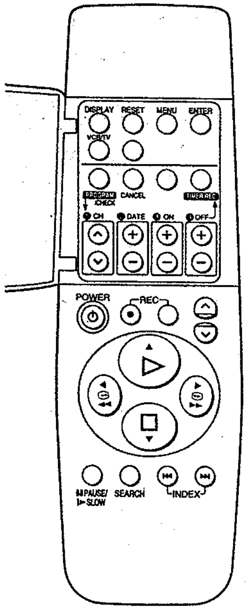
5 Press **MENU** twice to make the on screen display disappear.

Setting the Clock of your VCR

The built-in digital clock is used to activate the timer for automatic recording and must be set to the correct time. It employs the 24-hour system.

Preparations

- •Confirm that the TV is on and the VCR viewing channel is selected.
- •Turn on the VCR.


DISPLAY
RESET
MENU
ENTER
VCR/TV
PROGRAM /CHECK
CANCEL
TIMER REC
CH
DATE
ON
OFF
POWER
REC
PAUSE/ SLOW
SEARCH
INDEX

Time Reset Function

If the clock is less than two minutes slow or fast, it can easily be reset to the proper time.

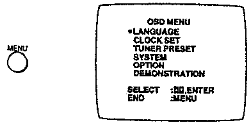
Example:
Resetting the clock to 12:00.00

1. Select **CLOCK SET** from the OSD menu and press **ENTER**.
2. When the current clock display on the VCR is between 11:58.00 and 12:01.59, press **MENU** as soon as you hear the 12:00.00 signal. This resets the time to 12:00.00.

Example:
Date; 16 October, 1999
Time; 20:15

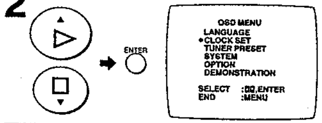
Operations **On Screen Display**

1


MENU
OSD MENU
•LANGUAGE
CLOCK SET
TUNER PRESET
SYSTEM
OPTION
DEMONSTRATION
SELECT :▲▼,ENTER
END :MENU

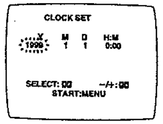
Press **MENU**.

2

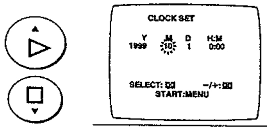

ENTER
OSD MENU
LANGUAGE
•CLOCK SET
TUNER PRESET
SYSTEM
OPTION
DEMONSTRATION
SELECT :▲▼,ENTER
END :MENU

Select **CLOCK SET**.

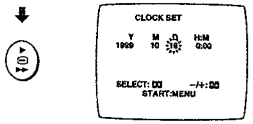
3 Set each item by pressing ▲ or ▼ and ▶. Press ◀ to return to the previous item.


CLOCK SET
Y M D H:M
1999 1 1 0:00
SELECT: ▲▼ −/+:▶◀
START:MENU

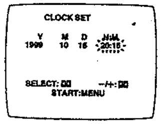
Set **Year** to “1999”.


CLOCK SET
Y M D H:M
1999 10 1 0:00
SELECT: ▲▼ −/+:▶◀
START:MENU

Set **Month** to “10”.


CLOCK SET
Y M D H:M
1999 10 16 0:00
SELECT: ▲▼ −/+:▶◀
START:MENU

Set **Date** to “16”.


CLOCK SET
Y M D H:M
1999 10 16 20:15
SELECT: ▲▼ −/+:▶◀
START:MENU

Set **Time** to “20:15”.

- •When it is kept pressed, the indication changes in 30-minute steps.
- •There is no need to press ▶.

4

Display Symbol

Press **MENU**.

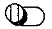
- •The clock starts.

Note:
Since this product does not have a backup system, the VCR's clock must be reset in the event that the power should fail.

Setting the System Switch

Setting the System Switch for Playback

This VCR can play back tapes recorded in the video system of PAL, MESECAM or NTSC. Set the System switch according to the video system of a tape you want to play back.
When you play back a tape, make sure that the system switch is set properly.

Video system of a playback tape	System Switch		Output Colour	
	SYSTEM*1	NTSC SELECT	Video Output	Aerial Output
PAL	•AUTO PAL MESECAM NTSC	—	PAL	PAL B.G/I/D.K 5.5 6.0 6.5
MESECAM	•AUTO PAL MESECAM NTSC	—	SECAM	SECAM B.G/I/D.K 5.5 6.0 6.5
NTSC	•AUTO PAL MESECAM NTSC	NTSC SELECT 4.43 NTSC P.B. — 3.58 	Quasi-PAL	Quasi-PAL B.G/I/D.K 5.5 6.0 6.5
	•AUTO PAL MESECAM NTSC	NTSC SELECT 4.43 NTSC P.B. — 3.58 	NTSC 4.43	NTSC 4.43 B.G/I/D.K 5.5 6.0 6.5
	•AUTO PAL MESECAM NTSC	NTSC SELECT 4.43 NTSC P.B. — 3.58 	NTSC 3.58	NTSC 3.58 B.G/I/D.K 5.5 6.0 6.5

Setting the System Switch for Recording

The System switch should be set also when you make a TV programme recording or AV external recording.
When you make a recording or a timer programme recording, make sure that the system switch is set properly.

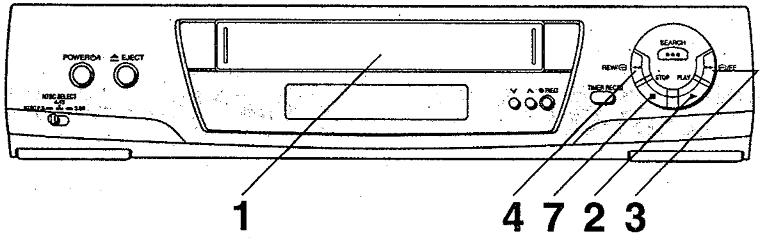
System		System Switch			Recorded Tape
		TUNER PRESET*2 (SYSTEM)	SYSTEM*1	NTSC SELECT	
BROADCASTS	PAL B/G PAL I PAL D	•BGDK I or BGDK •I	•AUTO PAL MESECAM NTSC	—	PAL
	*3 SECAM D/K SECAM B/G	•BGDK I	•AUTO PAL MESECAM NTSC	—	MESECAM
LINE IN	PAL	—	•AUTO PAL MESECAM NTSC	—	PAL
	NTSC 3.58	—	•AUTO PAL MESECAM NTSC	NTSC SELECT 4.43 NTSC P.B. — 3.58 	NTSC
	NTSC 4.43	—	•AUTO PAL MESECAM NTSC	NTSC SELECT 4.43 NTSC P.B. — 3.58 	

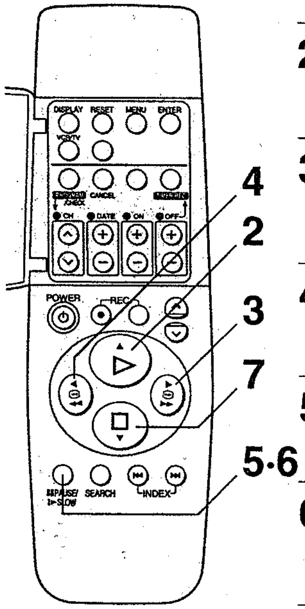
[1] OSD (On Screen Display) setting (See page 14.)
If the picture lacks colour when **AUTO** is set, set to **PAL, MESECAM** or **NTSC.**

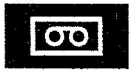
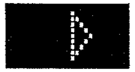
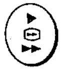
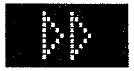
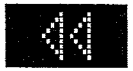
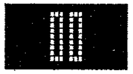
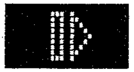
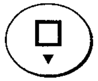
[2] OSD (On Screen Display) setting (See page 11.)

[3] If the picture lacks colour when **MESECAM** of **TUNER PRESET** is **AUTO**, set to **ON**. (See page 11.)

Playback


POWER/
EJECT
SEARCH
REW
FF
STOP
PLAY
1
4
7
2
3


DISPLAY
RESET
MENU
ENTER
VCR/TV
CANCEL
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX
4
2
3
7
5·6

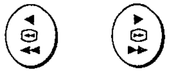
	Operations	Display Symbols	
1			Insert a recorded video cassette tape.
2			Start viewing the picture.
3			Search forward by tapping **FF**. •To change back to normal playback, press **PLAY**.
4			Search backward by tapping **REW**. •To change back to normal playback, press **PLAY**.
5			View a still picture. •Press **PAUSE/SLOW**. •To continue normal playback, press **PLAY** or **PAUSE/SLOW**.
6			View a slow motion picture. •Keep **PAUSE/SLOW** pressed for 2 seconds or more. •To continue normal playback, press **PLAY**.
7			Stop viewing the picture.

Note:
If you keep **FF** or **REW** pressed in step **3** or **4**, search playback is activated while the button is pressed, and operation returns to normal playback when the button is released.

Other Playback Functions

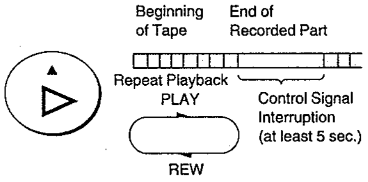
To Obtain a High Speed Picture During Fast Forward or Rewind

Keep **FF** pressed during fast forward.
Keep **REW** pressed during rewind.



To Playback the Recorded Part Repeatedly

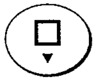
Keep **PLAY** pressed for 5 seconds or more.
The "R ▶" display appears on the TV screen.


Beginning of Tape
End of Recorded Part
Repeat Playback
PLAY
Control Signal Interruption (at least 5 sec.)
REW

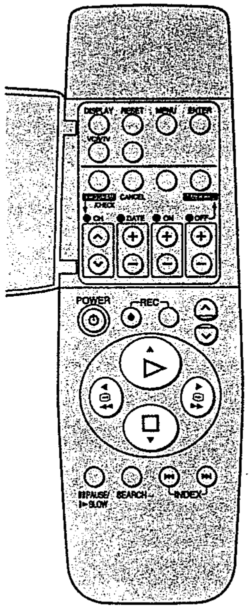
- Press **STOP** to release the VCR from the Repeat Playback mode.

To Eject the Video Cassette Using the Remote Controller

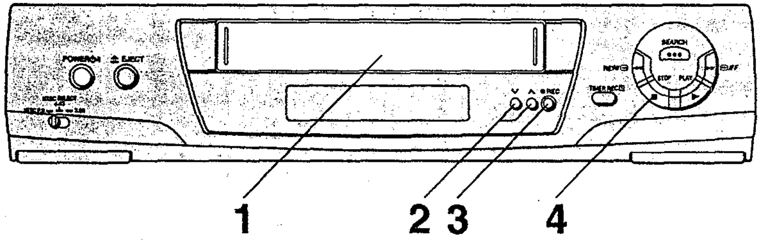
Keep pressing **STOP** for at least 3 seconds.

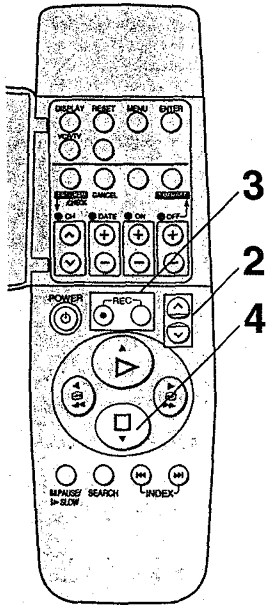


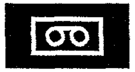
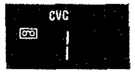
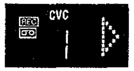
Notes:
- Make sure that the System switch is set properly. See page 17.
- Cue, review or slow playback will be automatically released after 10 minutes, and still playback, after 5 minutes.
- In Cue and Review playback, noise bars and distortions may occur on the screen. However, this is not a malfunction.


DISPLAY
RESET
MENU
ENTER
VCR/TV
CANCEL
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX

Manual Recording


POWER
EJECT
SEARCH
REW
FF
TIMER REC
STOP
PLAY
REC
1
2
3
4

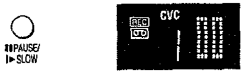

DISPLAY
RESET
MENU
ENTER
CANCEL
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX
3
2
4

Operations	Display Symbols	
1		Insert a video cassette tape with an intact erasure prevention tab. •If it has already been inserted, press **POWER** ⏻/I to turn the VCR on.
2		Select the TV station.
3		Start recording.
4		Stop recording.

To Interrupt Recording

Press **PAUSE/SLOW** during recording.
Press again to continue recording.

Display Symbol


PAUSE/SLOW
REC
CVC

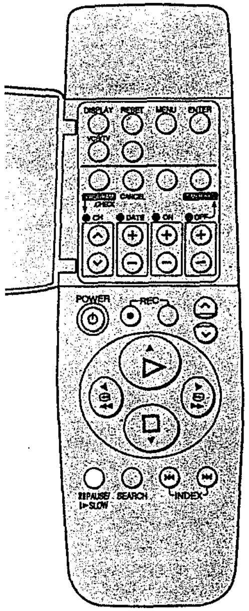
To Record One TV Programme while Viewing Another One

1 Refer to steps **1–3** of the manual recording operation.

2 Select the TV programme on your TV that you wish to view now.

Notes:

- Make sure that the System switch is set properly. See page 17.
- When a video cassette with a broken off erasure prevention tab is inserted, the "oo" indication will flash to indicate that recording is not possible.
- The recording pause mode will be automatically released after 5 minutes, and the VCR will return to the stop mode.


DISPLAY
RESET
MENU
ENTER
CANCEL
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX

Timer Recording

Using the On Screen Display

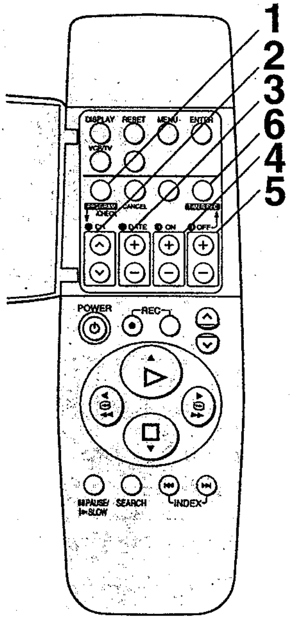
Up to 8 timer programmes, including weekly and daily programmes, can be recorded up to one month in advance by setting the timer.

Preparations

- Insert a video cassette tape with an intact erasure prevention tab.
- Confirm that the TV is on and the VCR viewing channel is selected.
- Turn on the VCR.
- Make sure that the System switch is set properly. See page 17.

Example:

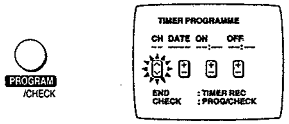
Programme position (channel);	2
Date;	27 October
Starting time;	20:02
Ending time;	21:30
(Present date; 16 October)	



1
2
3
6
4
5
DISPLAY
RESET
MENU
ENTER
VCR/TV
PROGRAM/CHECK
CANCEL
TIMER REC
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX

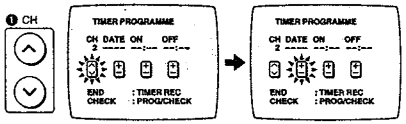
Operations **On Screen Display**

1 Press the **PROGRAM/CHECK** button.



PROGRAM /CHECK
TIMER PROGRAMME
CH DATE ON OFF
END :TIMER REC
CHECK :PROG/CHECK

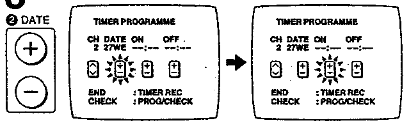
2 Set **Programme position** (channel) to "2".



❶ CH
TIMER PROGRAMME
CH DATE ON OFF
2
END :TIMER REC
CHECK :PROG/CHECK

- The next item will flash after about 2 seconds.

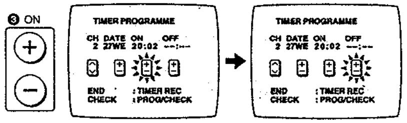
3 Set **Date** to "27/10".



❷ DATE
TIMER PROGRAMME
CH DATE ON OFF
2 27WE
END :TIMER REC
CHECK :PROG/CHECK

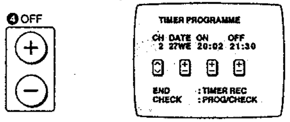
4 Set **Starting time** to "20:02".

- When kept pressed, the indication changes in 30-minute steps.



❸ ON
TIMER PROGRAMME
CH DATE ON OFF
2 27WE 20:02
END :TIMER REC
CHECK :PROG/CHECK

5 Set **Ending time** to "21:30".



❹ OFF
TIMER PROGRAMME
CH DATE ON OFF
2 27WE 20:02 21:30
END :TIMER REC
CHECK :PROG/CHECK

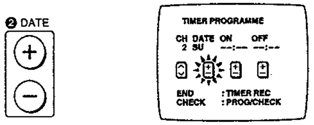
6 To activate timer recording, press **TIMER REC.**

- The "PROGRAMME IS COMPLETE." message appears.
- The VCR will be in the timer recording standby mode after about 1 minute, if **TIMER REC** is not pressed.

Weekly Timer Recording

In step **3**, select the desired day by pressing **DATE –**. For example, SU (Sunday)

On Screen Display



❷ DATE
TIMER PROGRAMME
CH DATE ON OFF
2 SU
END :TIMER REC
CHECK :PROG/CHECK

(SU=Sunday, MO=Monday, TU=Tuesday, WE=Wednesday, TH=Thursday, FR=Friday, SA=Saturday)

Daily Timer Recording

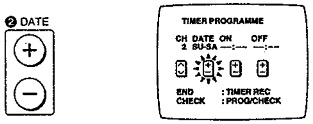
For this function, several groups of days can be selected.

Ⓐ Daily recording from Monday to Friday

Ⓑ Daily recording from Monday to Saturday

Ⓒ Daily recording from Sunday to Saturday

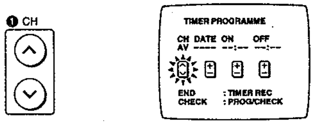
In step **3**, select the desired days by pressing **DATE –**. For example, Ⓒ



❷ DATE
TIMER PROGRAMME
CH DATE ON OFF
2 SU-SA
END :TIMER REC
CHECK :PROG/CHECK

Timer Recording from an External Signal Source

If timer recording is performed by a unit connected to the audio/video input sockets, select the AV indicator in step **2** for the programme position.



❶ CH
TIMER PROGRAMME
CH DATE ON OFF
AV
END :TIMER REC
CHECK :PROG/CHECK

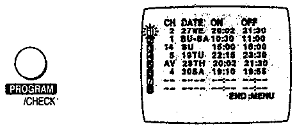
Setting other Programmes in Succession

Repeat steps **1–6**.

Checking a Timer Programme

- The VCR must be turned on, or the timer recording indicator "⌚" lit.
- Confirm that the TV is on and the VCR viewing channel is selected.

1 Press **PROGRAM/CHECK** twice.

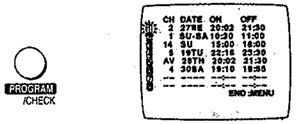


PROGRAM /CHECK
CH DATE ON OFF
2 27WE 20:02 21:30
1 SU-SA 10:30 11:00
14 SU 15:00 16:00
5 19TU 22:15 23:30
AV 29TH 20:02 21:30
4 30SA 19:10 19:55
END :MENU

Cancelling a Timer Programme

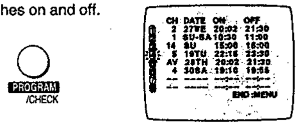
- The VCR must be turned on, or in timer recording standby mode.
- Confirm that the TV is on and the VCR viewing channel is selected.

1 Press **PROGRAM/CHECK** twice.



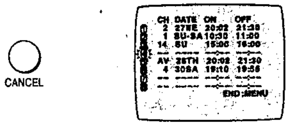
PROGRAM /CHECK
CH DATE ON OFF
END :MENU

2 Press **PROGRAM/CHECK** repeatedly until the desired timer programme number flashes on and off.



PROGRAM /CHECK
CH DATE ON OFF
END :MENU

3 Press **CANCEL**.



CANCEL
CH DATE ON OFF
END :MENU

Note:

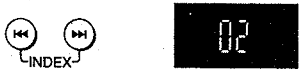
If timer recording is not completed (due to insufficient tape or cancellation by the user), the programmed timer recording data will be cancelled from the memory by 4 A.M. two days later.
However, if, at that time, the timer recording function is activated, the programmed timer recording data will be cancelled at 4 A.M. the next day.

Search Functions

To Find the Beginning of Each Recording (VHS Index Search System)

Example:
Searching for the 2nd recorded segment in the forward direction.
Press **INDEX** ▶▶| twice.
(This operation is performed while the VCR is in the stop mode or normal playback mode.)

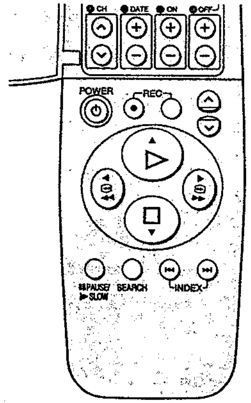
Display Symbol



- After finding the specific recorded segment, playback starts automatically.
- For the reverse direction, press **INDEX** |◀◀.
- Up to 20 index signals can be searched for in both directions.
- When the opposite **INDEX** button is pressed, the number will decrease to 1.
- The figure on the display decreases by 1 each time an index signal is located.

Recording Index Signals
Index signals are recorded in the following cases.
- When a recording is started by pressing **REC**.
- When **REC** is pressed during recording.
- When timer recording is activated.

Note:
The index search function can only work correctly if the index signals are spaced at least 3 minutes.



Searching while checking the video cassette contents (Intro-Jet Scan)

The approximate beginnings of each recorded programme are played in succession at the high speed so that the programme to be viewed can be located easily.

Preparations
- Confirm that the TV is on and the VCR viewing channel is selected.
- Load the pre-recorded video cassette.

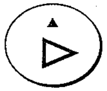
1 Press **SEARCH**.
(This operation is performed while the VCR is OFF or while the VCR is in the stop mode or normal playback mode.)

On Screen Display

INTRO-JET SCAN

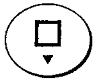
- The tape is rewound to the start, and played for about 10 seconds at the high speed. It is then fast forwarded, the VISS (VHS Index Search System) signals are searched in succession, and each time the signals are found, the tape is played for about 10 seconds at the high speed.

2 When the programme to be viewed is reached, press **PLAY**.



- Normal playback now commences.

To stop the operation at any time
Press **STOP**.



Note:
This function may not work properly when recorded programmes run for 15 minutes or less.

Editing

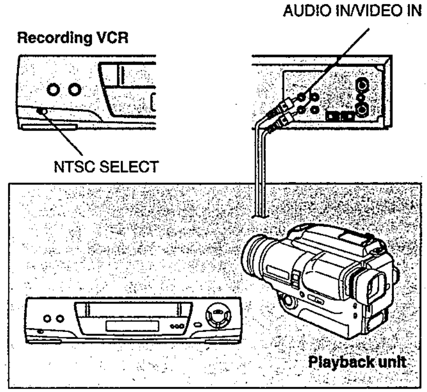
Assembly Editing

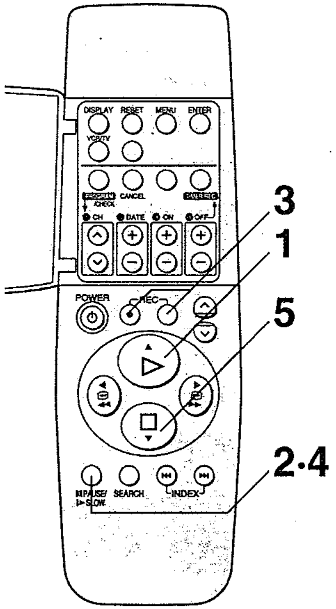
This function can be used to create an edited tape from other recordings or video sources.

New scenes can be added to the end of existing ones.

Preparations

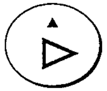
- Connect a movie camera or other VCR to this VCR as shown.
- Insert a recorded video cassette tape with an intact erasure prevention tab.
- Select the required video source by pressing ∨ ∧ to set AV.
- Make sure that the System switch is set properly. See page 17.





Operations

1 Search for the end of the last recording.

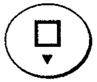


2 Press **PAUSE/SLOW**.

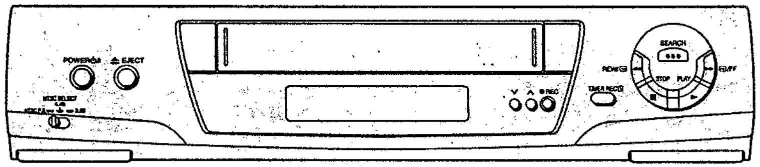
3 Press **REC** to switch the VCR from the pause mode to the recording standby mode.

4 Start the new recording by pressing **PAUSE/SLOW** again.

5 Press **STOP** to stop recording.



Other Functions



NTSC Playback

Tapes recorded in the NTSC system can be played back with this VCR via a PAL system TV.

- Set **NTSC SELECT** according to the colour TV system of the TV. See page 17.

NTSC P.B.:	For TVs that can receive PAL signals.
4.43:	For TVs that can receive NTSC 4.43 signals.
3.58:	For TVs that can receive NTSC 3.58 signals.

Note:

On some TVs, the playback picture may roll up or down; adjust this using the V-HOLD control on the TV. TVs not equipped with a V-HOLD control cannot correct this condition. The playback picture may shrink vertically, and black bars may appear both on the top and bottom of the screen. This does not indicate a malfunction.

- During cue, review, still or slow playback, the picture may not be in colour. Alternatively, the top of the TV screen may be distorted.

Note for only NTSC Playback on PAL system TV

This function is designed to allow only the playback of tapes recorded by NTSC signals on a PAL system TV. The NTSC signal is not completely converted to a PAL signal. For this reason, images played back by this function cannot be recorded correctly on other VCRs.

Other Automatic Functions

Automatic Playback

When a video cassette without an erasure prevention tab is inserted, the VCR starts playback automatically.

VCR-off Playback

When the VCR is off, an inserted video cassette can be played back by pressing **PLAY**.

Automatic Rewinding

When the tape reaches its end during recording (except for timer recording) or playback, it will automatically be rewound to the beginning.

Automatic Switching Off and Ejection

When the VCR is switched off, an inserted video cassette can be ejected by simply pressing **EJECT**. The VCR will eject the video cassette and automatically turn itself off again.

Dear Customer

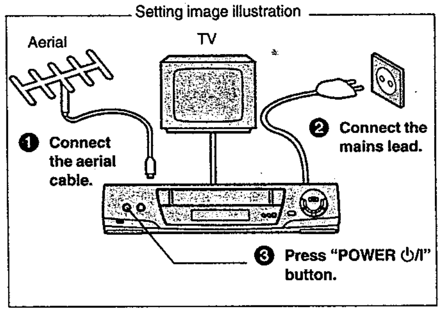
Thank you for purchasing this Panasonic Video Cassette Recorder.

We strongly suggest that you carefully study the Operating Instructions before attempting to operate the VCR, and that you note the listed precautions.

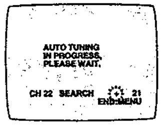
AI Crystal View Control

The AI Crystal View Control optimizes playback characteristics.
During playback, the contrast of tapes recorded at the appropriate contrast setting is automatically optimized.

Auto Tuning


Setting image illustration
Aerial
TV
❶ Connect the aerial cable.
❷ Connect the mains lead.
❸ Press "POWER ⏻/I" button.

On Screen Display



Auto Tuning is completed.

All broadcasting stations that can be received in the area are automatically tuned and stored in memory.

- Don't turn off the VCR halfway. (See pages 9–10.)

СЕКЦИЯ 1
ОБЩЕЕ ОПИСАНИЕ

1-1. СЕРВИСНАЯ ИНФОРМАЦИЯ

1-1-1. ИНИЦИАЛИЗАЦИЯ ИС КАНАЛА ПАМЯТИ

При замене IC6007 канала памяти, эту IC нужно инициализировать.

Метод:
1) Включить питание.
2) Соединить проволочную перемычку дважды к TL7506 и к TL7507.
3) Канал немедленно исчезнет и на FIP появится индикация канала 1.

Примечание:
1) Это надо произвести перед настройкой.
2) Не выключайте источник питания во время инициализации или 2 секунды после нее.
3) "ИНИЦИАЛИЗАЦИЯ" означает создание зависимости в различных моделях и выделение различий между разными характеристиками.
4) После инициализации, когда переключатель питания выключится и включится, начнется ATP (Предустановка Автоматической Настройки).

1-1-2. СЕРВИСНОЕ ПОЛОЖЕНИЕ

ПРОВЕРКА ОСНОВНОЙ С.В.А.

При обслуживании ОСНОВНОЙ С.В.А., выньте ОСНОВНУЮ С.В.А. и механизм из рамки и переверните.

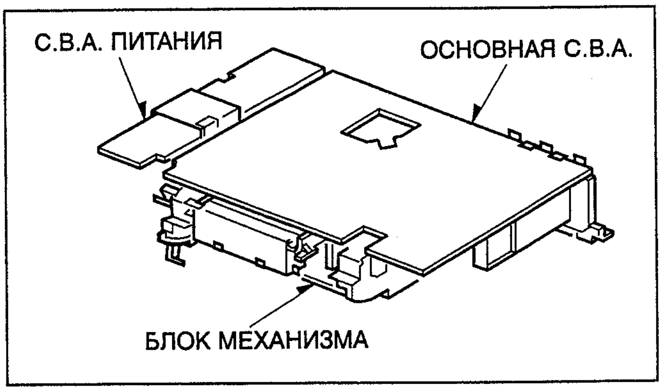


Рис. S1

1-1-3. ПЛАН ДЛЯ ПРЯМОЙ НАСТРОЙКИ КАНАЛА

План каналов NV-SD225AM/AMJ, SD220AM/AMJ соответствует местному плану каналов, а NV-SD225EU не имеет функции прямой настройки, поэтому планов каналов не существует.

1-1-4. УДАЛЕНИЕ КАССЕТНОЙ ЛЕНТЫ

Имеется 2 метода удаления кассетной ленты.
1. Удаление обязательной загрузки.
   (1) Нажмите одновременно кнопки "FF", "REW" и EJECT" и установите севисный режим 7.
   (2) Нажмите кнопку "STOP", чтобы разгрузить механизм. (Обратите внимание на шлак ленты) Обозначение сервисного режима:
   7 ※※ ※※ (STOP) → 7 00 ※※ (EJECT)
2. Ручная операция удаления Главной кулачковой передачи.
   (1) Отсоедините шнур питания переменного тока и удалите верхнюю панель.
   (2) Вращайте главную кулачковую передачу по часовой стрелке и разгрузите механизм. (Лента остается).
3. Вращайте ось мотора ведущего вала по часовой стрелке от основания, чтобы удалить шлак ленты.
4. Вращайте главную кулачковую передачу по часовой стрелке, чтобы удалить кассетную ленту.

1-1-5. ЗАМЕНА БЛОКА ЦИЛИНДРА

А. ЗАМЕНА БЛОКА ЦИЛИНДРА

1) Удалите 3 винта (А) БЛОКА ЦИЛИНДРА при помощи магнитной отвертки.

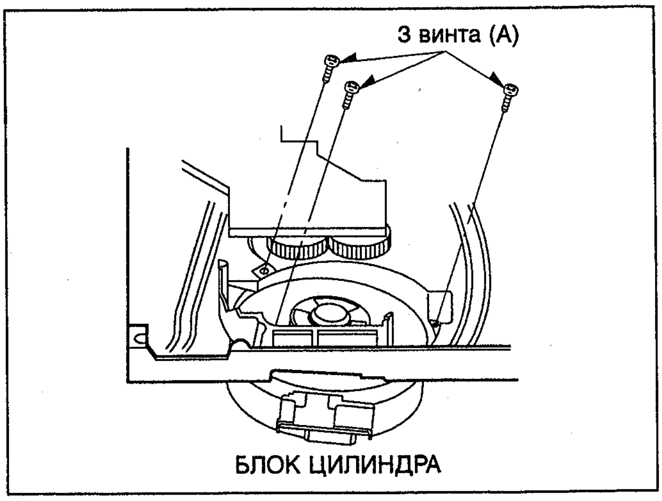


Рис. S2

В. РАЗБОРКА ВЕРХНЕГО ЦИЛИНДРА

1) Удалите 2 винта (А).
2) Удалите блок статора цилиндра.
3) Удалите 2 винта (В).
4) Удалите блок ротора цилиндра.
5) Ослабьте шестигранный винт (С) (1,5 мм) и удалите держатель цилиндра.
6) Удалите верхний цилиндр.

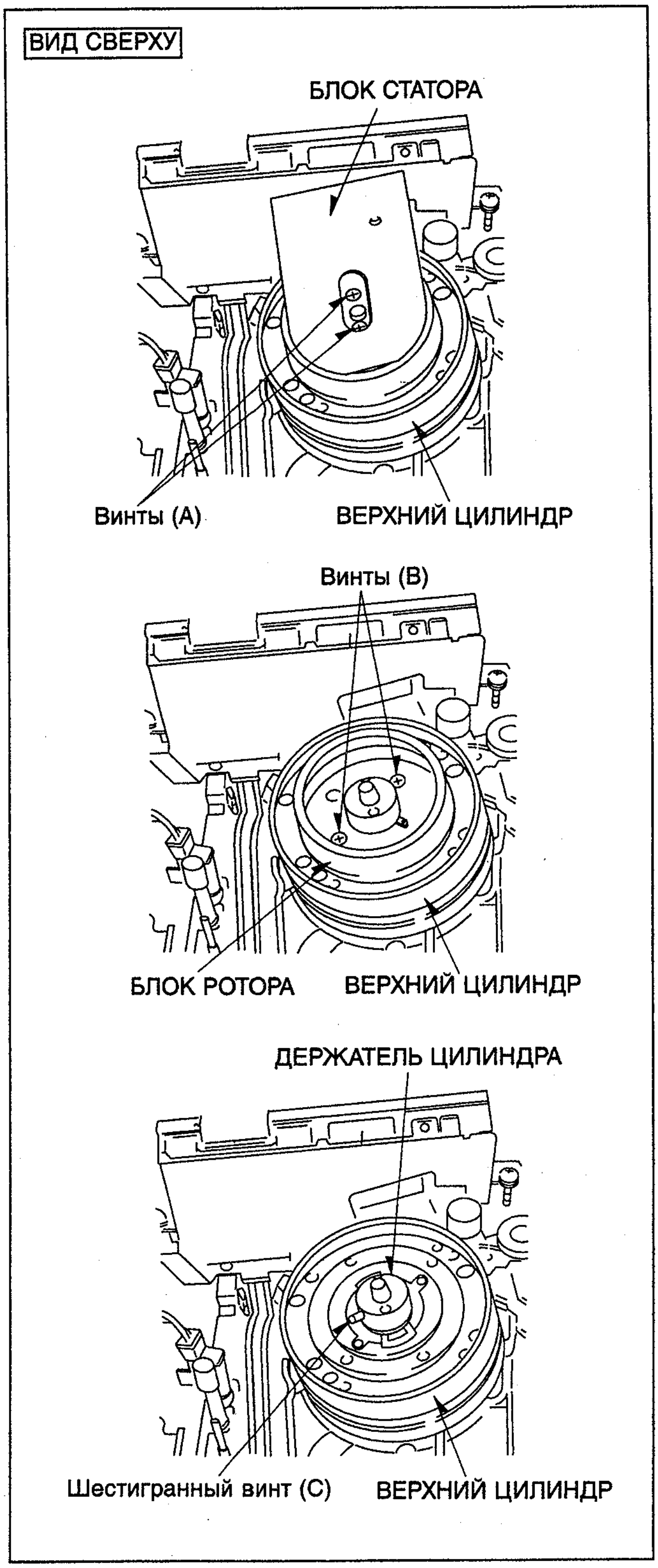

ВИД СВЕРХУ
БЛОК СТАТОРА
Винты (А)
ВЕРХНИЙ ЦИЛИНДР
Винты (В)
БЛОК РОТОРА
ВЕРХНИЙ ЦИЛИНДР
ДЕРЖАТЕЛЬ ЦИЛИНДРА
Шестигранный винт (С)
ВЕРХНИЙ ЦИЛИНДР

Рис. S3

С. СБОРКА ВЕРХНЕГО ЦИЛИНДРА

При сборке, проводите операции в обратном порядке.

1) Вставьте держатель цилиндра так, чтобы 2 отверстия на верхней части держателя цилиндра были под прямым углом к щиту головки усилителя.
2) Затяните шестигранный винт (С) (1,5 мм), нажимая на верхнюю часть держателя цилиндра.

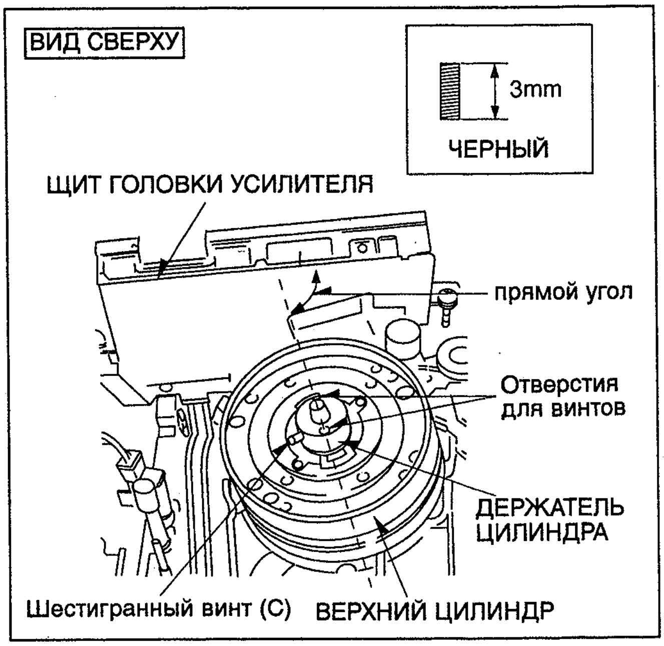

ВИД СВЕРХУ
3mm
ЧЕРНЫЙ
ЩИТ ГОЛОВКИ УСИЛИТЕЛЯ
прямой угол
Отверстия для винтов
ДЕРЖАТЕЛЬ ЦИЛИНДРА
Шестигранный винт (С)
ВЕРХНИЙ ЦИЛИНДР

Рис. S4

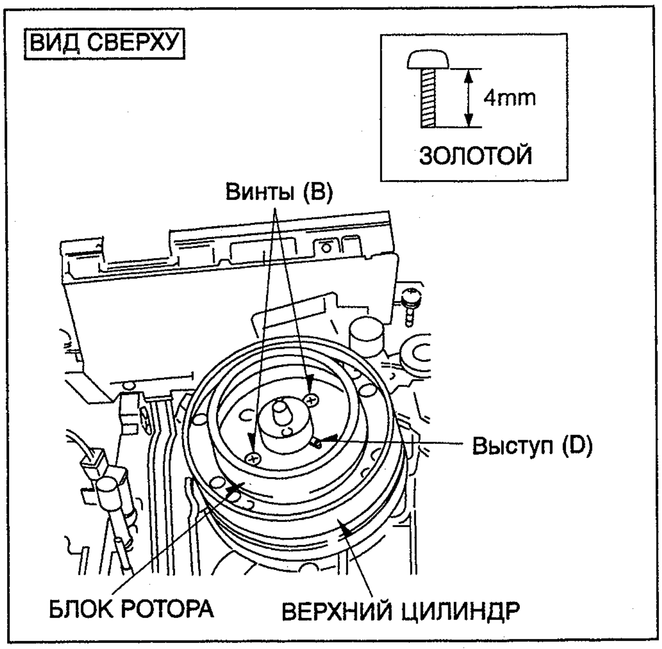

ВИД СВЕРХУ
4mm
ЗОЛОТОЙ
Винты (В)
Выступ (D)
БЛОК РОТОРА
ВЕРХНИЙ ЦИЛИНДР

Рис. S5

3) Вставьте блок ротора цилиндра так, чтобы внутреннее отверстие блока ротора цилиндра совпало с выступом (D) на верхней части верхнего цилиндра.
4) Затяните 2 винта (B).
5) Вставьте блок статора цилиндра так, чтобы задняя сторона С.В.А. статора цилиндра была параллельна щиту головки усилителя.
6) Затяните 2 винта (A).
7) Подтвердите РЕГУЛИРОВКУ ПЕРЕКЛЮЧАТЕЛЯ PG при помощи измерительной ленты (ПАЛ: VFJ8125H3F/НТСЦ: VFM8080HQFP) и отрегулируйте, если необходимо.

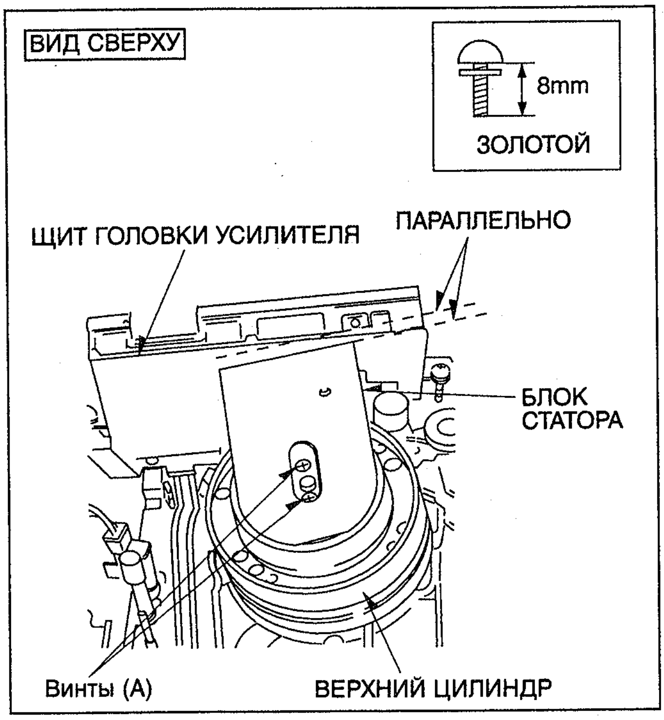


Рис. S6

1-2. ПРЕДОСТОРОЖНОСТИ ВО ВРЕМЯ НАСТРОЙКИ

ПРОЦЕДУРА

Проведите следующие операции перед автонастройкой.

1. Подсоедините кабель DIN-RF.
2. Подсоедините силовой провод переменного тока.
3. Включите видеомагнитофон.
   Начнется автонастройка.
   Автонастройка ведет поиск ТВ станций в диапазоне от ОВЧ минимум до УВЧ максимум и запоминает каждое настроенное положение программ.
   Остальные положения программ пропускаются.
   Автонастройка займет семь или более минут для завершения поиска.
   Не пользуйтесь КВМ во время автонастройки.
   Автонастройка остановится на полпути, если КВМ используется или отсоединены провод антенны и/или силовой провод.
   Если КВН остановился во время автонастройки, его надо переустановить и запустить повторно.
   См. следующий пункт 2.

ПРИМЕЧАНИЕ

1. Если КВМ включен при отсоединенной антенне, то все каналы будут пропущены. Поэтому, плотно подсоедините антенну и затем выключите и опять включите КВМ для проведения автонастройки.
2. **Если автонастройка отменена на полпути, то автонастройка не осуществится даже, если Вы выключите и снова включите КВМ.**
   В данном случае, надо повторно начать автонастройку, используя следующие операции.
   (1) Нажмите на кнопку "EJECT" и удалите видеокассету.
   (2) Держите одновременно нажатыми на КВМ кнопки ∧ и ∨ в течение 3-х или более секунд, при включенном КВМ.
   Изображение принимаемого канала на КВМ исчезнет на мгновение с экрана и переменится на канал1.
   (3) Выключите КВМ и включите его опять. Начнется автонастройка.
3. Если Вы выключите КВМ во время автонастройки, то автонастройка остановится на полпути.
   КВМ надо переустановить и повторно запустить, используя пункт 2 для осуществления автонастройки.
4. Если КВМ начнет воспроизведение во время автонастройки, то автонастройка остановится на полпути.
   КВМ надо переустановить и повторно запустить, используя пункт 2 для осуществления автонастройки.
5. Для отмены операции автонастройки на полпути, нажмите "POWER" во время автонастройки (КВМ выключится).
6. Если КВМ перевозится в другой район или страну, надо повторно заложить в память данные ТВ-вещания.

1-3. ДИСПЛЕЙ ИНДИКАЦИИ САМОТЕСТИРОВАНИЯ

Обращайтесь к Сервисной Инструкции для Мехинического Шасси Z.

1-4. ДИСПЛЕЙ СЕРВИСНОЙ ИНФОРМАЦИИ

Обращайтесь к Сервисной Инструкции для Механического Шасси Z.

1-4. ЧАСЫ-ЭТАЛОН ТАЙМЕРА

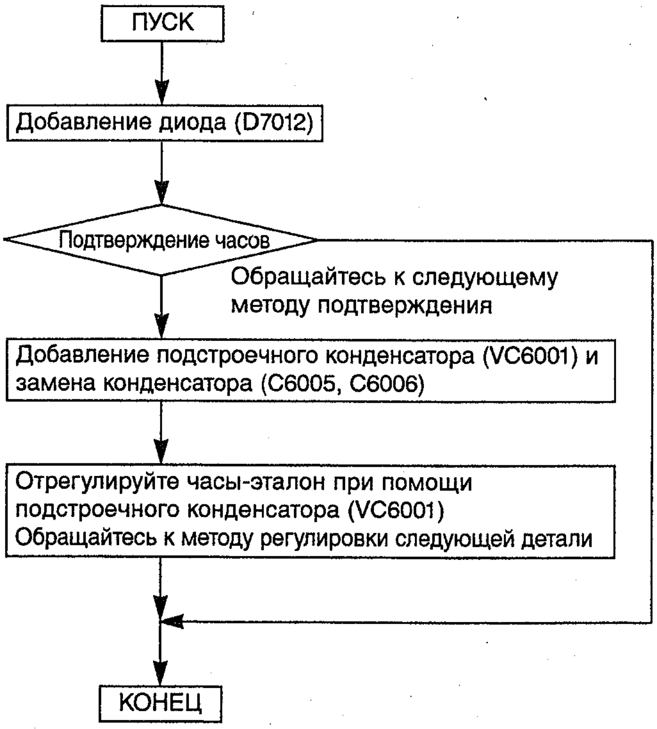
В случае проведения следующих ремонтных операций (замена частей), надо провести регулировку часов-эталона таймера, чтобы можно было гарантировать точность времени, так как изменилось значение регулировки.
a) Заменен кварцевый генератор (X6001).
b) Заменено ЭСППЗУ (IC6007).
Не надо проводить регулировку, если заменен микропроцессор системы контроля (IC6001).

ПРОЦЕДУРА РЕГУЛИРОВКИ ЧАСОВ-ЭТОЛОНА ТАЙМЕРА

Следующие части надо добавить и заменить перед началом регулировки, чтобы можно было проводить подтверждение и/или настройку.

Список частей

№ заказа	№ последней части	№ новой части	Описание
D7012	—	MA165	ДИОД
VC6001	—	ECRHA030E54R	ПОДСТРОЕЧНЫЙ КОНДЕНСАТОР
C6005-06	ECUM1H150JCN	ECUM1H100DCN	КОНДЕНСАТОР


ПУСК
Добавление диода (D7012)
Подтверждение часов
Обращайтесь к следующему методу подтверждения
Добавление подстроечного конденсатора (VC6001) и замена конденсатора (C6005, C6006)
Отрегулируйте часы-эталон при помощи подстроечного конденсатора (VC6001)
Обращайтесь к методу регулировки следующей детали
КОНЕЦ

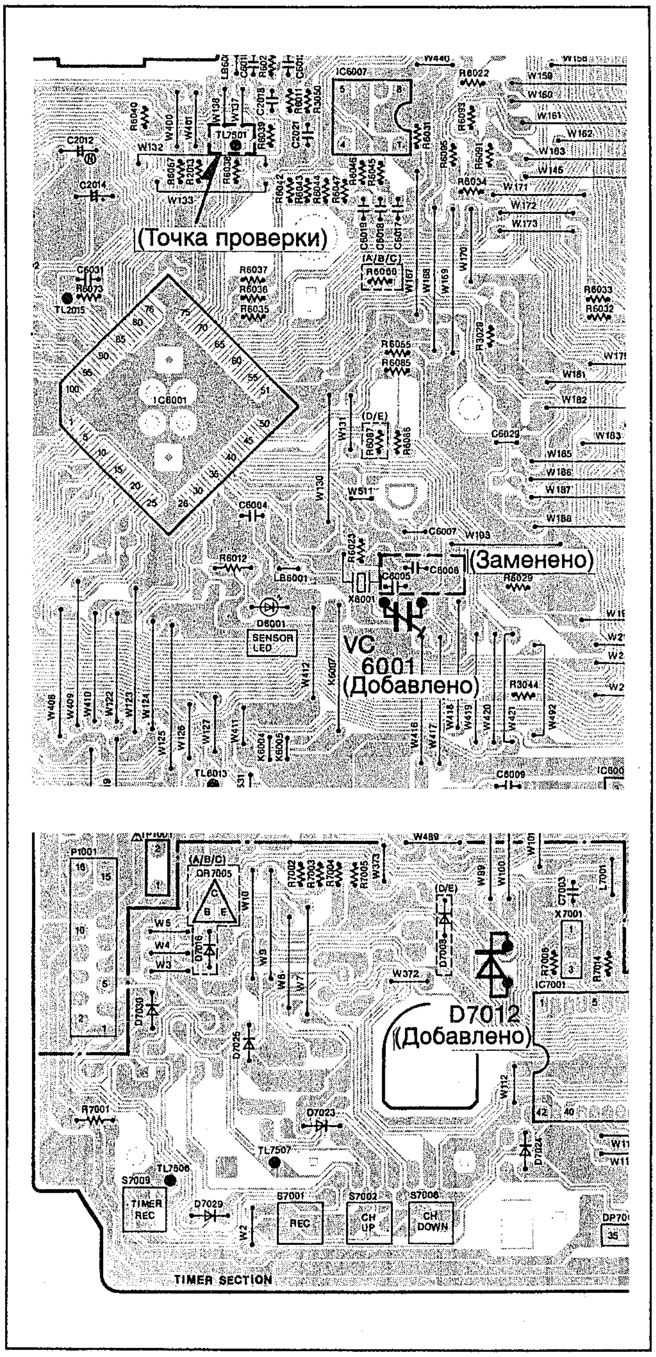

TL7501
(Точка проверки)
IC6001
IC6007
(Заменено)
C6005
C6006
X6001
VC 6001 (Добавлено)
SENSOR LED
D7012 (Добавлено)
TIMER REC
REC
CH UP
CH DOWN
TIMER SECTION

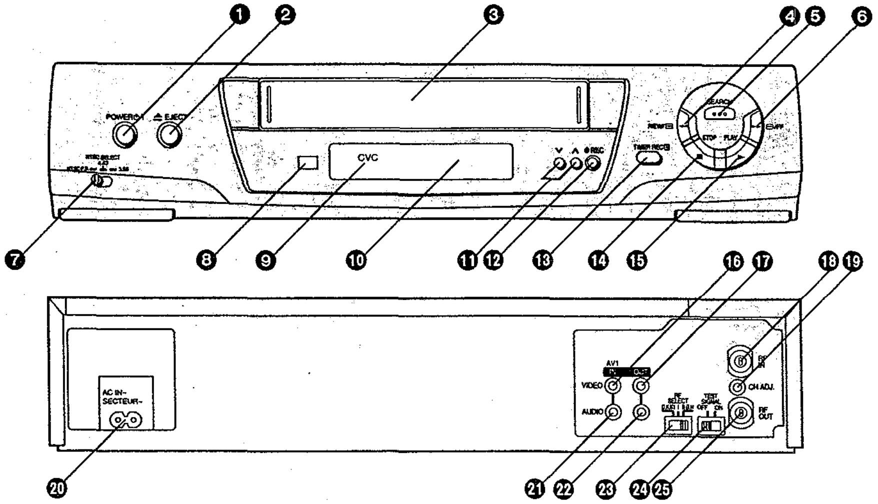
Рис. T1

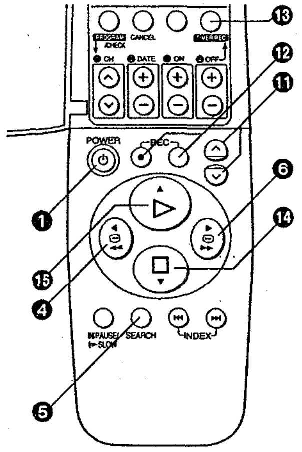
Метод подтверждения
1. Подсоедините счетчик частоты к TL7501.
2. Убедитесь, что частота равна 7812,5 +-0,03 (мс) в режиме ОСТАНОВА.

Метод регулировки
1. Подсоедините счетчик частоты к TL7501.
2. Регулируйте VC6001, пока частота не будет равна 7812,5 +-0,03 (мс) в режиме ОСТАНОВА.

Органы управления и соединительные гнезда

Здесь дается детальное объяснение функций каждой кнопки, переключателя и соединительного гнезда.





ПЕРЕДНЯЯ ПАНЕЛЬ

① **Питание (POWER ⏻/I)**
Переключает ВКМ из режима включено (ON) в режим готовности и обратно. В режиме готовности ВКМ остается подключенным к сети питания переменного тока.

② **Выброс (EJECT)**
Используется для выброса видеокассеты.

③ **Кассетный блок**
Видеокассету следует вставлять здесь.

④ **Ускоренная перемотка в обратном направлении (REW)**
В режиме остановки: ускоренно перематывает ленту.
В режиме воспроизведения: выполняется поиск в обратном направлении.
В режиме перемотки: достигается изображение с высокой частотой смены кадров.
Высвечивается индикатор "◁◁".

⑤ **Поиск (SEARCH)**
Выполняется поиск записанной программы, Ускоренного сканирования начал занисанных программ.

⑥ **Ускоренная перемотка в прямом направлении (FF)**
В режиме остановки: ускоренно перематывает ленту в прямом направлении.
В режиме воспроизведения: выполняется поиск в прямом направлении.
В режиме ускоренной перемотки ленты в прямом направлении: достигается изображение с высокой частотой смены кадров.
Высвечивается индикатор "▷▷".

⑦ **Выбор NTSC (NTSC SELECT)**
Установите в соответствии с системой цветности ТВ.
NTSC P.B.: Для телевизоров, которые могут принимать сигналы системы PAL. Выходной сигнал является сигналом системы квази-PAL.
4.43: При приеме сигналов системы NTSC 4.43. Для телевизоров, которые могут принимать сигналы системы NTSC 4.43.
3.58: При приеме сигналов системы NTSC 3.58. Для телевизоров, которые могут принимать сигналы системы NTSC 3.58.

⑧ **Окошко приемника устройства инфракрасного дистанционного управления**

⑨ **Индикатор контроля изображения с помощью интегральной схемы (CVC)**
Этот индикатор обычно высвечивается в случае, если ВКМ включен.

⑩ **Дисплей**

⑪ ∨ ∧
Используется для выборки требуемой программной позиции (ТВ станции) на ВКМ.
Для регулировки трекинга и регулировки вертикальной фиксации
- Для ручной регулировки трекинга
Кнопки ∨ и ∧ используются для регулировки трекинга, когда, например, шумовые полосы на изображении удаляются вручную лучше, чем при помощи автоматического цифрового трекинга. Завершив ручную регулировку, нажмите обе кнопки вместе для того, чтобы вернуться в режим автоматического цифрового управления трекингом.
- Для медленной регулировки трекинга
Если во время режимов воспроизведения стоп-кадра или замедленного воспроизведения появляются шумовые полосы, переключите на режим замедленного воспроизведения и добейтесь уменьшения шумовых полос регулировкой кнопки ∨ или ∧.
- Для регулировки вертикальной фиксации
Пользуйтесь кнопками ∨ и ∧ для уменьшения вертикального дрожания во время воспроизведения стоп-кадра.

⑫ **Запись (REC)**
Используется для инициирования записи.
- Нажмите обе кнопки одновременно для устройства дистанционного управления.

⑬ **Запись по таймеру (TIMER REC)**
Используется для включения и выключения функции записи по таймеру.
Индикатор 🅃 высвечивается или не высвечивается.
При включении функции записи по таймеру нормальное функционирование ВКМ невозможно до тех пор, пока Вы снова не нажмете эту кнопку и не отключите режим готовности к записи по таймеру на ВКМ.

⑭ **Остановка (STOP)**
Используется для остановки воспроизведения, записи или выброса видеокассеты.

⑮ **Воспроизведение (PLAY)**
Используется для инициирования воспроизведения.
Высвечивается индикатор "▷".
Используется для функции повторного воспроизведения.

ЗАДНЯЯ ПАНЕЛЬ

⑯ **Видео вход (VIDEO IN)**
Используется для подсоединения видеокабеля от видеокамеры или другого видеомагнитофона.

⑰ **Видео выход (VIDEO OUT)**
Используется для подсоединения видеокабеля к телевизору или другому видеомагнитофону.

⑱ **Радиочастотный вход (RF IN)**
Используется для подсоединения к внешней антенне.

⑲ **Регулировка каналов (CH ADJ.)**
Используется для перенастройки РЧ передающих каналов E30~40 (C22~27).

⑳ **Вход переменного тока (AC IN~)**
Используется для подсоединения к электрической сети.

㉑ **Аудио вход (AUDIO IN)**
Используется для подсоединения аудиокабеля от видеокамеры или другого видеомагнитофона.

㉒ **Аудио выход (AUDIO OUT)**
Используется для подсоединения аудиокабеля к телевизору или другому видеомагнитофону.

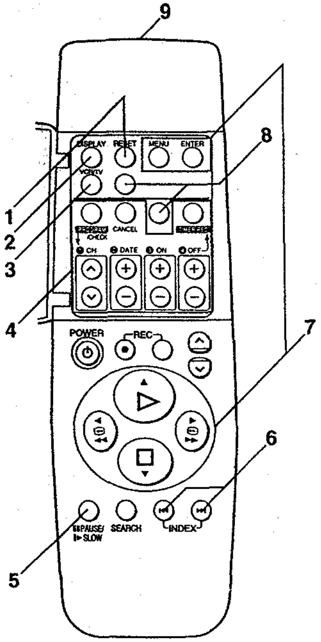
㉓ **Селектор радиочастот (RF SELECT)**
Используется для установки системы цветности, используемой в подключаемом телевизоре.
D.K.K1: PAL D/SECAM D.K.K1
I: PAL I
B.G.H: PAL B.G.H/SECAM B.G

㉔ **Тестовый сигнал (TEST SIGNAL)**
Тестовый сигнал передается по каналу E38 или C25.

㉕ **Радиочастотный выход (RF OUT)**
Используется для соединения с антенным разъёмом телевизора.

Инфракрасное устройство дистанционного управления

Инфракрасное устройство дистанционного управления для этого ВКМ является универсальным устройством дистанционного управления. Поэтому некоторые его кнопки не используются для управления ВКМ.



1 Сброс (RESET)

Используется для сброса счетчика ленты (истекшего времени) на “0:00.00”.

- При вставлении видеокассеты счетчик автоматически сбрасывается на “0:00.00”.

2 Дисплей (DISPLAY)

Используется для изменения индикации, отображаемой на дисплее ВКМ, или при отображении информации на экране телевизора следующим образом.

→Часы→Счетчик—

3 ВКМ/ТВ (VCR/TV)

Эта кнопка не используется для управления ВКМ.

4 Кнопки управления записью по таймеру

Программа/проверка (PROGRAM/CHECK)

Используется для установки и проверки программ для записи по таймеру.

Отмена (CANCEL)

Используется для отмены установок, сделанных для записи по таймеру.

Запись по таймеру (TIMER REC)

Используется для включения и выключения функции записи по таймеру.
Индикатор 🕒 высвечивается или не высвечивается.
При включении функции записи по таймеру нормальное функционирование ВКМ невозможно до тех пор, пока Вы снова не нажмете эту кнопку и не отключите режим готовности к записи по таймеру на ВКМ.

Проверка (CH), Дата (DATE), Вкл (ON), Выкл (OFF)

Используется для программирования записи по таймеру.

5 Пауза/Стоп-кадр/Замедленное воспроизведение PAUSE/SLOW .

Во время воспроизведения:

- При нажатии: стоп-кадр. Высвечивается индикатор “▯▯”.
- При нажатии в течение 2 или более секунд: замедленное воспроизведение. Высвечивается индикатор “▯▷”.

Во время записи: прерывает запись.

6 Индекс (INDEX)

Используется для поиска по индексации.

7 Кнопки управления меню отображения информации на экране телевизора

Кнопки с буквами зеленого цвета используются для работы с меню отображения информации на экране телевизора.

Меню (MENU)

Используется для инициирования появления главного меню для отображения информации на экране телевизора.

Ввод (ENTER)

Используется для подтверждения выбора или сохранения.

▲ ▼ ◄ ►

Используется для выполнения выборок при отображении информации на экране телевизора.

- Эти кнопки могут также использоваться для режимов воспроизведения, остановки, ускоренной перемотки в обратном и прямом направлениях.

8 Эти кнопки не используются для управления данным ВКМ.

9 Инфракрасный передатчик

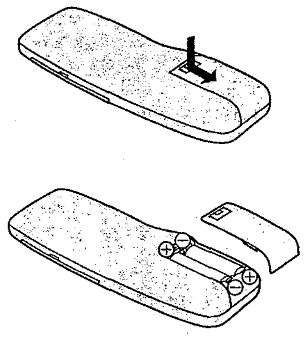
Источник питания для устройства дистанционного управления

Устройство дистанционного управления снабжается электропитанием от 2-х батарей размера “AA”, “UM3” или “R6”. Срок службы батарей составляет приблизительно один год, однако он зависит от частоты использования.

Меры предосторожности при замене батарей

- Устанавливайте новые батареи, правильно выполнив расстановку их полярностей (⊕ и ⊖).
- Не следует нагревать батареи, иначе может произойти внутреннее замыкание.
- Если Вы не собираетесь использовать устройство дистанционного управления в течение длительного периода времени, то следует удалить батареи и хранить их в сухом и прохладном месте.
- Использованные батареи следует немедленно удалить и выбросить в мусор.
- Не следует использовать одновременно старые и новые батареи, а также никогда не следует использовать одновременно щелочные и марганцевые батареи.

Установка батарей



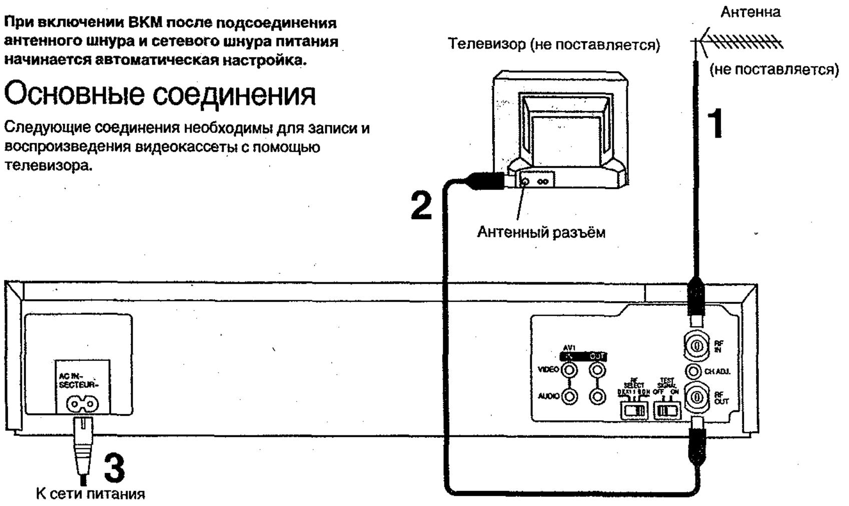
Соединения

В этом разделе объясняется подсоединение ВКМ к антенне, телевизору и т.д.

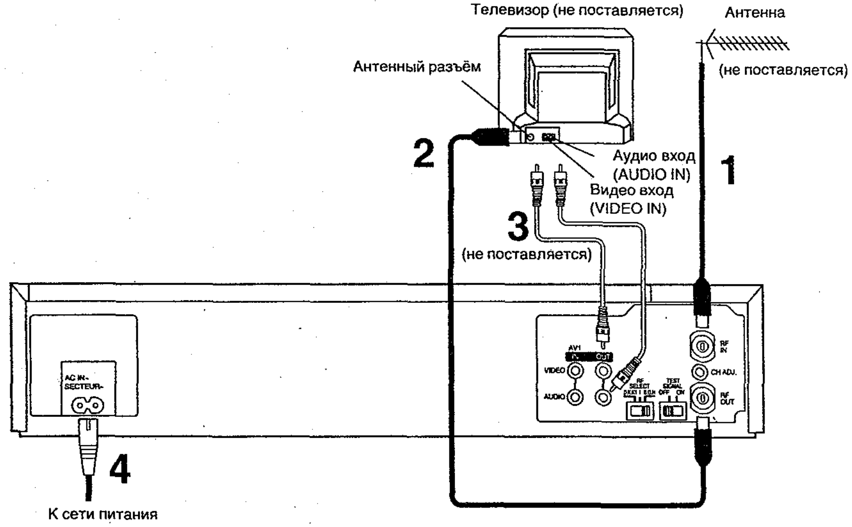
При включении ВКМ после подсоединения антенного шнура и сетевого шнура питания начинается автоматическая настройка.

Основные соединения

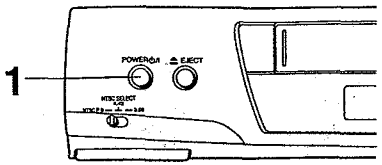
Следующие соединения необходимы для записи и воспроизведения видеокассеты с помощью телевизора.

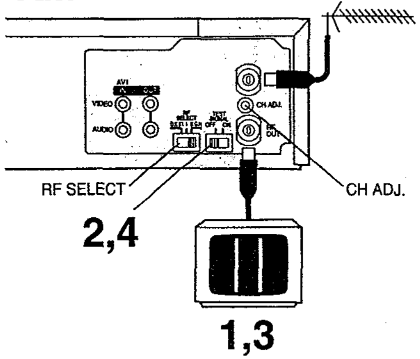

Антенна
Телевизор (не поставляется)
(не поставляется)
1
2
Антенный разъём
AV1
IN
OUT
VIDEO
AUDIO
AC IN-SECTEUR
RF SELECT
TEST SIGNAL
OFF ON
RF IN
CH ADJ.
RF OUT
3
К сети питания

Соединение с телевизором, используя аудио/видео входы


Телевизор (не поставляется)
Антенна
Антенный разъём
(не поставляется)
2
Аудио вход (AUDIO IN)
Видео вход (VIDEO IN)
1
3
(не поставляется)
AV1
IN
OUT
VIDEO
AUDIO
AC IN-SECTEUR
RF SELECT
TEST SIGNAL
OFF ON
RF IN
CH ADJ.
RF OUT
4
К сети питания

Настройка ТВ на Ваш ВКМ


1
POWER⏻/I
EJECT
NTSC SELECT


AV1
IN
OUT
VIDEO
AUDIO
CH ADJ.
RF OUT
RF SELECT
CH ADJ.
2,4
1,3

ВКМ передает сигнал на ТВ через радиочастотный коаксиальный кабель по каналу E38 или C25.
На Вашем телевизоре можно наблюдать такое же видеоизображение, как и во время просмотра телетрансляций.
Если Вы подсоединили видеомагнитофон к телевизору через видео и аудио входные гнезда, тогда Вам не потребуется проделывать процедуру, описанную ниже.
При включении ВКМ после подсоединения антенного шнура и сетевого шнура питания начинается автоматическая настройка.

Примечания:

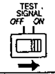
- Если ВКМ включается с неподсоединенной антенной, пропускаются все каналы. Следовательно, плотно подсоедините антенну, а затем выключите ВКМ и включите его снова для выполнения автоматической настройки.
- При отмене автоматической настройки в середине она не выполняется, даже если ВКМ выключается, а затем включается снова. В этом случае смотрите раздел **"Для начала автоматической настройки вновь"** на стр. 40.

Операции

1

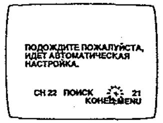
Включите телевизор и видеомагнитофон. Убедитесь, что ВКМ подсоединен к антенному кабелю.
- Начинается автоматическая настройка. (См. следующую страницу.)

2


TEST SIGNAL
OFF ON

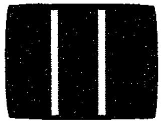
Для генерации тестового сигнала, установите переключатель **TEST SIGNAL** в положение ON.

3 Отображение информации на экране телевизора



ПОДОЖДИТЕ ПОЖАЛУЙСТА, ИДЕТ АВТОМАТИЧЕСКАЯ НАСТРОЙКА.
CH 22 ПОИСК 21
КОНЕЦ:MENU

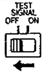
Во время автоматической настройки



Тестовый сигнал (после автоматической настройки)

Установите телевизор на свободный канал, который Вы желаете использовать для видео воспроизведения.
- Выполняйте настройку ТВ до тех пор, пока на экране не появится тестовый сигнал.
- Во время автоматической настройки экран тестового сигнала не появляется, а вместо него появляется экран автоматической настройки.

4


TEST SIGNAL
OFF ON

Установите переключатель **TEST SIGNAL** в положение OFF.

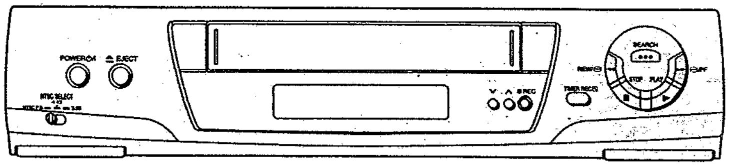
Примечание:
Тестовый сигнал передается по видео каналу E38 (B.G.H.I.K.K1) или C25 (CHINA). Если Вы сталкиваетесь с помехами от телевещания на этом видео канале, Вы можете перестроиться на другой свободный канал (E30–40, C22–27) посредством регулировки винта **CH ADJ.**, расположенного на задней панели видеомагнитофона.
При вращении винта **CH ADJ.** бчдьте осторожны, чтобы не отвернуть его слишком сильно.
Пожалуйста, обратите внимание на то, что, если Вы воспользуетесь винтом **CH ADJ.**, Вам следует перестроить Ваш телевизор обратно на тестовый сигнал, следуя вышеописанным пунктам 2–4.

Радиочастотный селектор (RF SELECT)
Радиочастотный селектор **RF SELECT** используется для выбора ТВ системы цветности, используемой в подключаемом телевизоре.

D.K.K1:	PAL D/SECAM D.K.K1
I:	PAL I
B.G.H:	PAL B.G.H/SECAM B.G

- Когда переключатель **NTSC SELECT** на передней панели установлен в положение 3.58 во время воспроизведения NTSC или записи сигналов NTSC, независимо от положения радиочастотного селектора **RF SELECT** будет выбрана система NTSC 3.58.

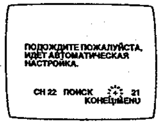
Хранение вещания ТВ в Вашем ВКМ


POWER⏻/I
⏏ EJECT
NTSC SELECT
∨
∧
● REC
TIMER REC
SEARCH
REW
FF
STOP
PLAY

Автоматическая настройка

При включении ВКМ после подсоединения антенного шнура и сетевого шнура питания начинается автоматическая настройка.

Отображение информации на экране телевизора


ПОДОЖДИТЕ ПОЖАЛУЙСТА,
ИДЕТ АВТОМАТИЧЕСКАЯ
НАСТРОЙКА.
CH 22 ПОИСК 21
КОНЕЦ:MENU

С помощью автоматической настройки отыскиваются ТВ станции от минимальной ОВЧ (VHF) до максимальной УВЧ (UHF), и запоминаются данные для каждой программной позиции.

- Если во время автоматической настройки Вы выключите ВКМ, автоматическая настройка будет остановлена на полпути.
- Если во время автоматической настройки на ВКМ начинается воспроизведение, автоматическая настройка будет остановлена на полпути.

Для отмены операции автоматичеокой настройки в середине:

Нажмите кнопку **POWER ⏻/I** во время автоматической настройки. ВКМ выключается, и автоматическая настройка отменяется.

Для начала автоматической настройки вновь:

1 Нажмите кнопку **EJECT** и удалите видеокассету.

2 Держите нажатыми одновременно кнопки ∨ ∧ на ВКМ в течение 3 или более секунд при включенном ВКМ.

- Канал, высвечиваемый на дисплее ВКМ, на мгновение исчезает, а затем изменяется на 1.

Символы дисплея

Исчезает→1

3 Выключите ВКМ, а затем включите его снова.

- Начинается автоматическая настройка.

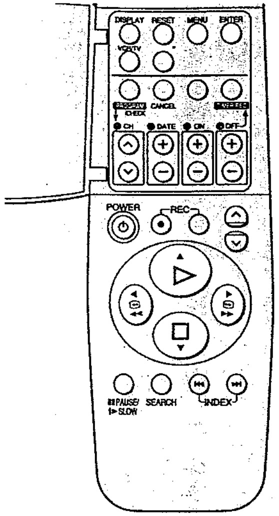
Автоматическая настройка с помощью отображения информации на экране телевизора

Введение

Видеомагнитофон снабжен своим собственным тюнером (таким, какой имеется у обычного телевизора) и может быть установлен для приема до 99 телевизионных вещательных станций.

Подготовка

- Убедитесь в том, что телевизор включен, и выбран желаемый канал просмотра изображения с видеомагнитофона.
- Включите ВКМ и выберите любую программную позицию, за исключением AV.

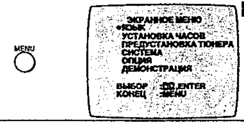

DISPLAY
RESET
MENU
ENTER
VCR/TV
PROGRAM/CHECK
CANCEL
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX

Примечания:

- Функция автоматической настройки отыскивает ТВ станции в диапазоне от минимальной ОВЧ (VHF) до максимальной УВЧ (UHF) и запоминает данные для каждой настроенной программной позиции. Оставшиеся программные позиции пропускаются.
- Завершение поиска с помощью функции автоматической настройки занимает семь или более минут.
- Установки для индикаций **СИСТЕМА** и **MESECAM** производятся для каждой программной позиции, используя одинаковые установки, выбранные в пунктах **3** и **4**.
- В случае, если невозможно правильно настроить ВКМ с помощью автоматической настройки, следуйте процедуре на следующей странице.

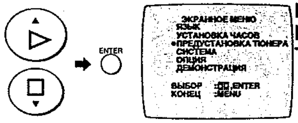
Операции / **Отображение информации на экране телевизора**

1


MENU
ЭКРАННОЕ МЕНЮ
●ЯЗЫК
УСТАНОВКА ЧАСОВ
ПРЕДУСТАНОВКА ТЮНЕРА
СИСТЕМА
ОПЦИЯ
ДЕМОНСТРАЦИЯ
ВЫБОР :▲▼,ENTER
КОНЕЦ :MENU

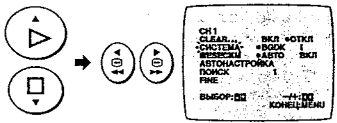
Нажмите кнопку **MENU**.

2


ENTER
ЭКРАННОЕ МЕНЮ
ЯЗЫК
УСТАНОВКА ЧАСОВ
●ПРЕДУСТАНОВКА ТЮНЕРА
СИСТЕМА
ОПЦИЯ
ДЕМОНСТРАЦИЯ
ВЫБОР :▲▼,ENTER
КОНЕЦ :MENU

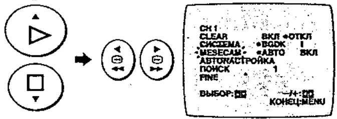
Выберите индикацию **ПРЕДУСТАНОВКА ТЮНЕРА**.

3


CH 1
CLEAR ВКЛ ●ОТКЛ
СИСТЕМА ●BGDK I
MESECAM ●АВТО ВКЛ
АВТОНАСТРОЙКА
ПОИСК 1
FINE
ВЫБОР:▲▼ −/+:◀▶
КОНЕЦ:MENU

Выберите индикацию **СИСТЕМА** и выберите желаемую систему телевещания.

4

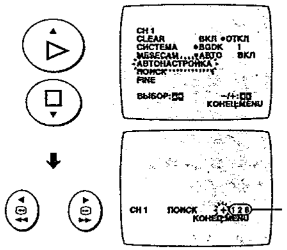

CH 1
CLEAR ВКЛ ●ОТКЛ
СИСТЕМА ●BGDK I
MESECAM ●АВТО ВКЛ
АВТОНАСТРОЙКА
ПОИСК 1
FINE
ВЫБОР:▲▼ −/+:◀▶
КОНЕЦ:MENU

Выберите индикацию **MESECAM** и выберите позицию **АВТО**.

5

Выберите индикацию **АВТОНАСТРОЙКА** и нажмите кнопку ◀ или ▶.

- После завершения автоматической настройки отображение информации на экране телевизора исчезает, и выбирается программная позиция 1.
- После автоматической настройки повторно установите позицию BGDK или I для индикации **СИСТЕМА** для системы телевещания PAL.
- Номер для пункта **CH** может быть отличен от такового для пункта **ПОИСК**.


CH 1
CLEAR ВКЛ ●ОТКЛ
СИСТЕМА ●BGDK I
MESECAM ●АВТО ВКЛ
АВТОНАСТРОЙКА
ПОИСК
FINE
ВЫБОР:▲▼ −/+:◀▶
КОНЕЦ:MENU
CH 1 ПОИСК + 128
КОНЕЦ:MENU

Это общие директивы для завершения настройки.

Процедура установки системы вручную

1 Выберите желаемую программную позицию нажатием кнопки ∨ или ∧.
2 Нажмите кнопку **MENU**.
3 Выберите индикацию **ПРЕДУСТАНОВКА ТЮНЕРА** нажатием кнопки ▲ или ▼, а затем нажмите кнопку **ENTER**.
4 Выберите индикацию **СИСТЕМА** нажатием кнопки ▲ или ▼, а затем выберите систему телевещания нажатием кнопки ◀ или ▶.
  - •BGDK: При приеме системы телевещания PAL B.G.H.D или SECAM B.G.D.K.K1.
  - •I: При приеме системы телевещания PAL I.
5 Нажмите кнопку **MENU** дважды.

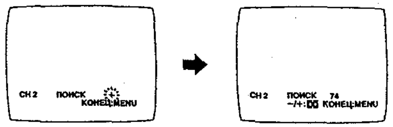
Процедура установки системы MESECAM вручную

1 Выберите желаемую программную позицию нажатием кнопки ∨ или ∧.
2 Нажмите кнопку **MENU**.
3 Выберите индикацию **ПРЕДУСТАНОВКА ТЮНЕРА** нажатием кнопки ▲ или ▼, а затем нажмите кнопку **ENTER**.
4 Выберите индикацию **MESECAM** нажатием кнопки ▲ или ▼, а затем выберите позицию **ВКЛ** нажатием кнопки ◀ или ▶.
5 Нажмите кнопку **MENU** дважды.

Процедура настройки вручную

1 Нажмите кнопку **MENU**.
2 Выберите индикацию **ПРЕДУСТАНОВКА ТЮНЕРА** нажатием кнопки ▲ или ▼, а затем нажмите кнопку **ENTER**.
3 Выберите индикацию **CH** нажатием кнопки ▲ или ▼, а затем выберите номер канала, на который Вы желаете настроиться, нажатием кнопки ◀ или ▶.
4 Убедитесь в том, что для индикации **CLEAR** выбрана позиция **ОТКЛ**.
5 Выберите индикацию **СИСТЕМА** нажатием кнопки ▲ или ▼, а затем выберите систему телевещания нажатием кнопки ◀ или ▶.
  - •BGDK: При приеме системы телевещания PAL B.G.H.D или SECAM B.G.D.K.K1.
  - •I: При приеме системы телевещания PAL I.
6 Выберите индикацию **MESECAM** нажатием кнопки ▲ или ▼, а затем выберите позицию **АВТО** нажатием кнопки ◀ или ▶.
  - ВКМ автоматически различает системы телевещания PAL и SECAM.
  - Если в изображении отсутствует цветность при выборе позиции **АВТО**, выберите позицию **ВКЛ**.
7 Выберите индикацию **ПОИСК** нажатием кнопки ▲ или ▼, а затем нажмите кнопку ◀ или ▶.

Отображение информации на экране телевизора

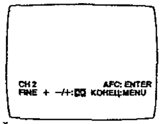

CH 2 ПОИСК
КОНЕЦ:MENU
CH 2 ПОИСК 74
−/+:◀▶ КОНЕЦ:MENU

8 Если настройка на желаемую ТВ станцию не была выполнена, нажмите кнопку ◀ или ▶ снова.

- Нажмите кнопку **MENU** и повторите пункты **3–8** для каждой программной позиции, которую Вы желаете настроить на станцию.
- Для выхода нажмите кнопку **MENU** три раза.

Процедура точной настройки

1 Нажмите кнопку **MENU**.
2 Выберите индикацию **ПРЕДУСТАНОВКА ТЮНЕРА** нажатием кнопки ▲ или ▼, а затем нажмите кнопку **ENTER**.
3 Выберите индикацию **CH** нажатием кнопки ▲ или ▼, а затем выберите программную позицию нажатием кнопки ◀ или ▶.
4 Выберите индикацию **FINE** нажатием кнопки ▲ или ▼.
5 Нажмите кнопку ◀ или ▶ с целью наилучшей настройки.


CH 2 AFC: ENTER
FINE + −/+:◀▶ КОНЕЦ:MENU

- Для возвращения настройки в предыдущее положение нажмите кнопку **ENTER**.

6 Нажмите кнопку **MENU**.

Исключение незанятых позиций программы

1 Нажмите кнопку **MENU**.
2 Выберите индикацию **ПРЕДУСТАНОВКА ТЮНЕРА** нажатием кнопки ▲ или ▼, а затем нажмите кнопку **ENTER**.
3 Выберите индикацию **CH** нажатием кнопки ▲ или ▼, а затем выберите программную позицию нажатием кнопки ◀ или ▶.
4 Выберите индикацию **CLEAR** нажатием кнопки ▲ или ▼.
5 Выберите позицию **ВКЛ** нажатием кнопки ◀ или ▶.
  - Повторите пункты **3–5** для другой незанятой программной позиции для пропуска во время выбора программных позиций.
  - Для отмены исключения программной позиции выберите эту программную позицию, а затем выберите позицию **CLEAR ОТКЛ**.
6 Нажмите кнопку **MENU** дважды.

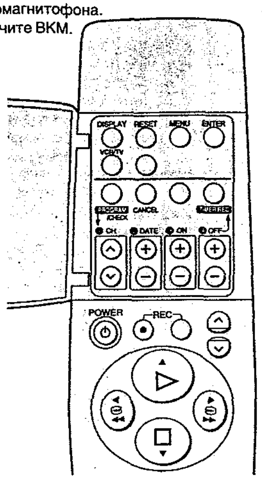
Схема каналов, которые могут приниматься

СИСТЕМА		ОВЧ	Кабельное ТВ	УВЧ
B G D K	**Стандарт CCIR STD (B.G.H)**	E2–E12	S01–S05 M1–M10 U1–U10 S21–S41	21–69
	CHINA (D)	1–12	Z1–Z35	13–57
	EAST EU (D.K.K1)	1–12	44–470 МГц	21–69
I	**HONG KONG, UK (I)**	—		21–69

Установка языка при отображении информации на экране телевизора

Подготовка

- Убедитесь в том, что телевизор включен, и выбран желаемый канал просмотра изображения с видеомагнитофона.
- Включите ВКМ.

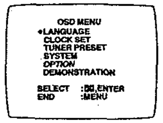

DISPLAY
RESET
MENU
ENTER
VCR/TV
PROGRAM/CHECK
CANCEL
TIMER REC
CH
DATE
ON
OFF
POWER
REC

Для выбора желаемого языка

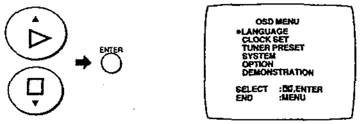
Выберите один из двух индицируемых языков: English или Русский.

1 Нажмите кнопку **MENU**.

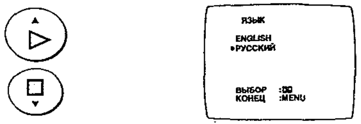
Отображение информации на экране телевизора


OSD MENU
•LANGUAGE
CLOCK SET
TUNER PRESET
SYSTEM
OPTION
DEMONSTRATION
SELECT :◀▶,ENTER
END :MENU

2 Выберите индикацию **LANGUAGE**.


ENTER
OSD MENU
•LANGUAGE
CLOCK SET
TUNER PRESET
SYSTEM
OPTION
DEMONSTRATION
SELECT :◀▶,ENTER
END :MENU

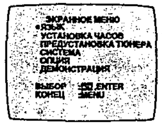
3 Выберите желаемый язык.


ЯЗЫК
ENGLISH
•РУССКИЙ
ВЫБОР :◀▶
КОНЕЦ :MENU

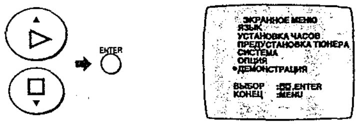
4 Нажмите кнопку **MENU** дважды.

Для демонстрации меню отображения информации на экране телевизора

1 Нажмите кнопку **MENU**.


ЭКРАННОЕ МЕНЮ
•ЯЗЫК
УСТАНОВКА ЧАСОВ
ПРЕДУСТАНОВКА ТЮНЕРА
СИСТЕМА
ОПЦИЯ
ДЕМОНСТРАЦИЯ
ВЫБОР :◀▶,ENTER
КОНЕЦ :MENU

2 Выберите индикацию **ДЕМОНСТРАЦИЯ**.

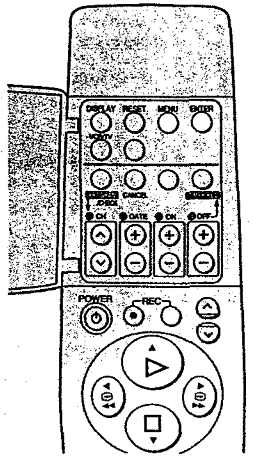

ENTER
ЭКРАННОЕ МЕНЮ
ЯЗЫК
УСТАНОВКА ЧАСОВ
ПРЕДУСТАНОВКА ТЮНЕРА
СИСТЕМА
ОПЦИЯ
•ДЕМОНСТРАЦИЯ
ВЫБОР :◀▶,ENTER
КОНЕЦ :MENU

- Во время режима демонстрации все отображения информации на экране телевизора высвечиваются одно за другим с интервалом около пяти секунд.

3 Нажмите кнопку **MENU** для остановки функции демонстрации.

Примечание:
Экран меню имеет голубой фон. Однако, если при выбранной позиции AV отсутствует входной сигнал, экран меню может измениться на черно-белый при нажатии кнопки **MENU**. Это не указывает на неисправность. Если это произойдет, подайте входной сигнал, либо выберите другую программную позицию.

Установки с использованием функции отображения информации на экране телевизора


DISPLAY
RESET
MENU
ENTER
CANCEL
CH
DATE
ON
OFF
POWER
REC

Подготовка

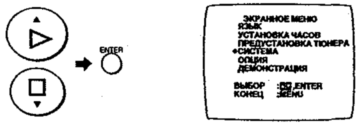
- Убедитесь в том, что телевизор включен, и выбран желаемый канал просмотра изображения с видеомагнитофона.
- Включите ВКМ.

Установка ТВ системы цветности

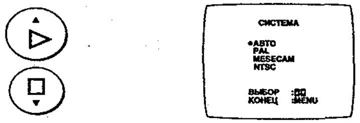
1 Нажмите кнопку **MENU**.

2 Выберите индикацию **СИСТЕМА**.

Отображение информации на экране телевизора


ENTER
ЭКРАННОЕ МЕНЮ
ЯЗЫК
УСТАНОВКА ЧАСОВ
ПРЕДУСТАНОВКА ТЮНЕРА
•СИСТЕМА
ОПЦИЯ
ДЕМОНСТРАЦИЯ
ВЫБОР :▢▷,ENTER
КОНЕЦ :MENU

3 Выберите индикацию **АВТО**.


СИСТЕМА
•АВТО
PAL
MESECAM
NTSC
ВЫБОР :▢▷
КОНЕЦ :MENU

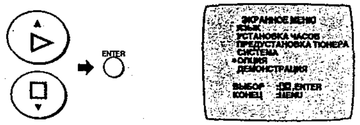
- ВКМ автоматически различает сигналы систем PAL, SECAM/MESECAM и NTSC. Если в изображении отсутствует цветность во время записи или воспроизведения с внешнего аудио/видео источника, установите в позицию **PAL**, **MESECAM** или **NTSC**.

4 Нажмите кнопку **MENU** дважды для гашения информации на экране телевизора.

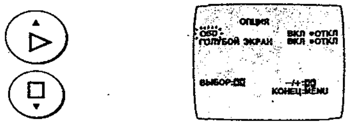
Отображение информации на экране телевизора

1 Нажмите кнопку **MENU**.

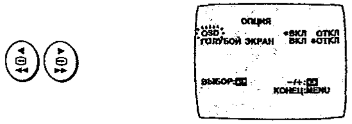
2 Выберите индикацию **ОПЦИЯ**.


ENTER
ЭКРАННОЕ МЕНЮ
ЯЗЫК
УСТАНОВКА ЧАСОВ
ПРЕДУСТАНОВКА ТЮНЕРА
СИСТЕМА
•ОПЦИЯ
ДЕМОНСТРАЦИЯ
ВЫБОР :▢▷,ENTER
КОНЕЦ :MENU

3 Выберите **OSD**.


ОПЦИЯ
OSD ВКЛ •ОТКЛ
ГОЛУБОЙ ЭКРАН ВКЛ •ОТКЛ
ВЫБОР:▢▷
–/+:▢▷
КОНЕЦ:MENU

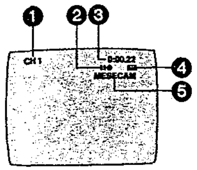
4 Выберите позицию **ВКЛ** или **ОТКЛ**.


ОПЦИЯ
OSD •ВКЛ ОТКЛ
ГОЛУБОЙ ЭКРАН ВКЛ •ОТКЛ
ВЫБОР:▢▷
–/+:▢▷
КОНЕЦ:MENU

ВКЛ:	Отображение информации будет появляться на экране телевизора.
ОТКЛ:	Отображение информации на экране телевизора не будет появляться.

5 Нажмите кнопку **MENU** дважды для гашения информации на экране телевизора.

Для использования отображения информации на экране телевизора:


❶
❷
❸
❹
❺
CH 1
0:00.22
MESECAM

❶ **Программная позиция**

❷ **Индикации движения ленты**

Остановка, Выброс	
Перемотка, обзор в обратном направлении	◀◀
Перемотка, обзор в прямом направлении	▶▶
Воспроизведение	▶
Воспроизведение стоп-кадра	❚❚
Запись	●
Пауза при записи	❚❚●
Замедленное воспроизведение	❚▶
Повторное воспроизведение	R ▶

❸ **Настоящее время/счетчик ленты/поиск по индексации**

Информация	Индикация
Настоящее время	17:24
Счетчик ленты	–2:35.45
Поиск по индексации	S01

❹ **Индикатор наличия кассеты**

❺ **Индикатор системы цветности**

Во время нормального воспроизведения появляется выбранная ТВ система цветности. (См. стр. 44.)

- В случае, если позиция **АВТО** установлена при работе функции **СИСТЕМА** при отображении информации на экране телевизора, индикация не появляется.

Когда для индикации **MESECAM** или **ПРЕДУСТАНОВКА ТЮНЕРА** выбрана позиция **ВКЛ** (см. стр. 41), появляется индикатор **MESECAM**.

Примечания:

- Во время специального воспроизведения отображение информации на экране телевизора может быть искажено или может исчезнуть.
- Отображение информации на экране телевизора непоявляется, когда для индикации **OSD** установлена позиция ОТКЛ. Для перезаписи установите позицию ОТКЛ для индикации **OSD**.
- При покупке ВКМ для индикации **OSD** установлена позиция ОКТЛ. Установки возвращаются в позицию ОТКЛ при выключении ВКМ.

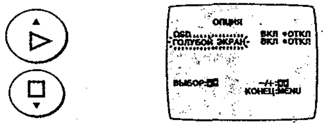
Для функции голубого экрана

Если для функции **ГОЛУБОЙ ЭКРАН** выбрана позиция **ВКЛ**, экран всегда будет иметь голубую окраску, когда сигнал не принимается, или принимаемый сигнал очень слабый.

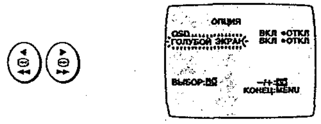
Следуйте пунктам **1** и **2** справа на стр. 44.

3 Выберите индикацию **ГОЛУБОЙ ЭКРАН**.

Отображение информации на экране телевизора


ОПЦИЯ
OSD ВКЛ •ОТКЛ
ГОЛУБОЙ ЭКРАН ВКЛ •ОТКЛ
ВЫБОР:▢▷
–/+:▢▷
КОНЕЦ:MENU

4 Выберите позицию **ВКЛ** или **ОТКЛ**.


ОПЦИЯ
OSD ВКЛ •ОТКЛ
ГОЛУБОЙ ЭКРАН ВКЛ •ОТКЛ
ВЫБОР:▢▷
–/+:▢▷
КОНЕЦ:MENU

- Если для функции **ГОЛУБОЙ ЭКРАН** выбрана позиция **ОТКЛ**, функция голубого экрана не активизируется.
- Запись голубого изображения функции голубого экрана невозможна.

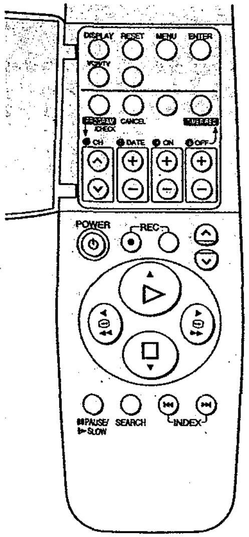
5 Нажмите кнопку **MENU** дважды для гашения информации на экране телевизора.

Установка часов Вашего ВКМ

Встроенные цифровые часы используются, чтобы привести в действие таймер для автоматической записи, и должны быть установлены на точное время. В них используется 24-часовая система.

Подготовка

- Убедитесь в том, что телевизор включен, и выбран желаемый канал просмотра изображения с видеомагнитофона.
- Включите ВКМ.


DISPLAY
RESET
MENU
ENTER
VCR/TV
CANCEL
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX

Функция сброса временной установки

Если часы спешат или отстают менее чем на две минуты, точное время может быть легко выставлено повторно.

Пример:

Выставить часы повторно на 12:00.00.

1 Выберите индикацию **УСТАНОВКА ЧАСОВ** при отображении информации на экране телевизора и нажмите кнопку **ENTER**.

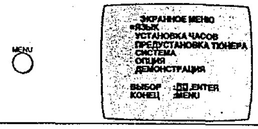
2 При показаниях текущего времени на дисплее ВКМ между 11:58.00 и 12:01.59 нажмите кнопку **MENU**, как только Вы услышите сигнал времени 12:00.00. При этом произойдет сброс времени на 12:00.00.

Пример:

- Дата; 16 октября 1999 года
- Время; 20:15.

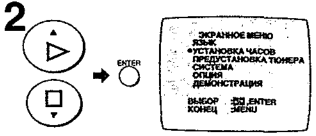
Операции **Отображение информации на экране телевизора**

1


MENU
ЭКРАННОЕ МЕНЮ
•ЯЗЫК
УСТАНОВКА ЧАСОВ
ПРЕДУСТАНОВКА ТЮНЕРА
СИСТЕМА
ОПЦИЯ
ДЕМОНСТРАЦИЯ
ВЫБОР :▲▼,ENTER
КОНЕЦ :MENU

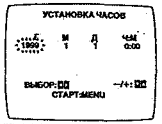
Нажмите кнопку **MENU**.

2

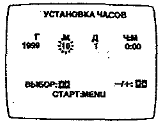

ENTER
ЭКРАННОЕ МЕНЮ
ЯЗЫК
•УСТАНОВКА ЧАСОВ
ПРЕДУСТАНОВКА ТЮНЕРА
СИСТЕМА
ОПЦИЯ
ДЕМОНСТРАЦИЯ
ВЫБОР :▲▼,ENTER
КОНЕЦ :MENU

Выберите индикацию **УСТАНОВКА ЧАСОВ.**

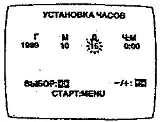
3 Установите каждый параметр нажатием ▲ или ▼ и ▶. Нажмите кнопку ◀ для возвращения к предыдущему пункту.


УСТАНОВКА ЧАСОВ
Г 1999
М 1
Д 1
Ч:М 0:00
ВЫБОР:◀▶
–/+:▲▼
СТАРТ:MENU

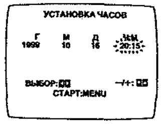
Установите **год (Г)** “1999”.


УСТАНОВКА ЧАСОВ
Г 1999
М 10
Д 1
Ч:М 0:00
ВЫБОР:◀▶
–/+:▲▼
СТАРТ:MENU

Установите **месяц (М)** “10”.


УСТАНОВКА ЧАСОВ
Г 1999
М 10
Д 16
Ч:М 0:00
ВЫБОР:◀▶
–/+:▲▼
СТАРТ:MENU

Установите **дату (Д)** “16”.

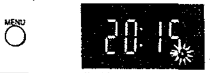

УСТАНОВКА ЧАСОВ
Г 1999
М 10
Д 16
Ч:М 20:15
ВЫБОР:◀▶
–/+:▲▼
СТАРТ:MENU

Установите **время (Ч:М)** “20:15”.

- При удерживании этой кнопки нажатой, индикации изменяются с шагом в 30 минут.
- Нет необходимости нажимать кнопку ▶.

4

Символы дисплея



Нажмите кнопку **MENU**.

- Часы начнут работать.

Примечание:

Так как это изделие не имеет резервной системы, в случае сбоя электропитания часы ВКМ должны быть установлены повторно.

Установка переключателя системы

Установка переключателя системы для воспроизведения

На данном ВКМ возможно воспроизведение лент, записанных в видеосистеме PAL, MESECAM или NTSC. Установите переключатель системы в соответствии с видеосистемой ленты, которую Вы желаете воспроизвести.

При воспроизведении ленты убедитесь в том, что переключатель системы установлен должным образом.

Видеосистема воспроизводимой ленты	Переключатель системы		Выходная цветность	
	СИСТЕМА*1	NTSC SELECT	Видеосигнал	Антенный выход
PAL	•АВТО PAL MESECAM NTSC	——	PAL	PAL B.G/I/D.K 5.5 6.0 6.5
MESECAM	•АВТО PAL MESECAM NTSC	——	SECAM	SECAM B.G/I/D.K 5.5 6.0 6.5
NTSC	•АВТО PAL MESECAM NTSC	NTSC SELECT 4.43 NTSC P.B. 3.58	квази-PAL	квази-PAL B.G/I/D.K 5.5 6.0 6.5
	•АВТО PAL MESECAM NTSC	NTSC SELECT 4.43 NTSC P.B. 3.58	NTSC 4.43	NTSC 4.43 B.G/I/D.K 5.5 6.0 6.5
	•АВТО PAL MESECAM NTSC	NTSC SELECT 4.43 NTSC P.B. 3.58	NTSC 3.58	NTSC 3.58 B.G/I/D.K 5.5 6.0 6.5

Установка переключателя системы для записи

Следует также выполнить установку переключателя системы, когда выполняется запись ТВ программы или запись с внешнего аудио/видео источника.

При выполнении записи или записи по таймеру убедитесь, что переключатель системы установлен должным образом.

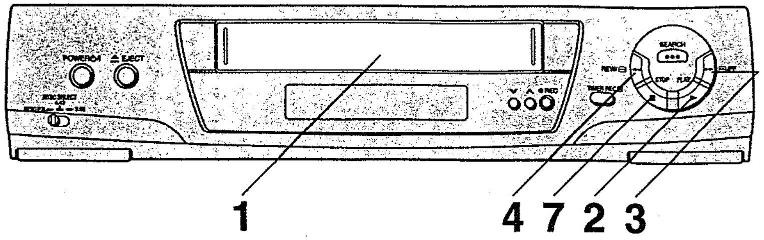
Система		Переключатель системы			Записанная Кассета
		ПРЕДУСТАНОВКА ТЮНЕРА*2 (СИСТЕМА)	СИСТЕМА*1	NTSC SELECT	
ТЕЛЕВЕЩАНИЕ	PAL B/G PAL I PAL D	•BGDK I или BGDK •I	•АВТО PAL MESECAM NTSC	——	PAL
	*3 SECAM D/K SECAM B/G	•BGDK I	•АВТО PAL MESECAM NTSC	——	MESECAM
ВХОД	PAL	——	•АВТО PAL MESECAM NTSC	——	PAL
	NTSC 3.58	——	•АВТО PAL MESECAM NTSC	NTSC SELECT 4.43 NTSC P.B. 3.58	NTSC
	NTSC 4.43	——	•АВТО PAL MESECAM NTSC	NTSC SELECT 4.43 NTSC P.B. 3.58	

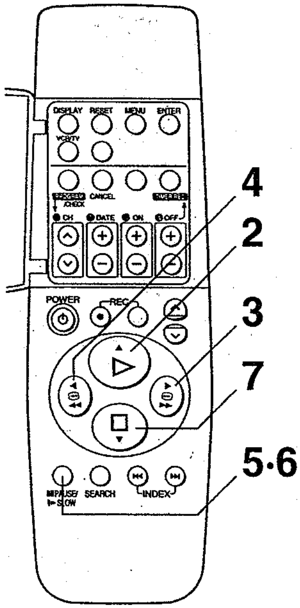
*1 Установка OSD (отображения информации на экране телевизора) (см. стр. 44).
Если в изображении отсутствует цветность, когда выбрана позиция **АВТО**, установите в позицию **PAL**, **MESECAM** или **NTSC**.

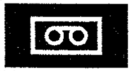
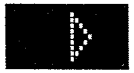
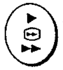
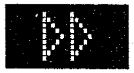
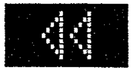
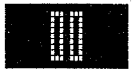
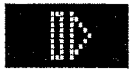
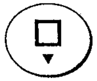
*2 Установка OSD (отображения информации на экране телевизора) (см. стр. 41).

*3 Если в изображении отсутствует цветность, когда для индикации **MESECAM** функции **ПРЕДУСТАНОВКА ТЮНЕРА** выбрана позиция **АВТО**, установите в позицию **ВКЛ**. (См. стр. 41.)

Воспроизведение

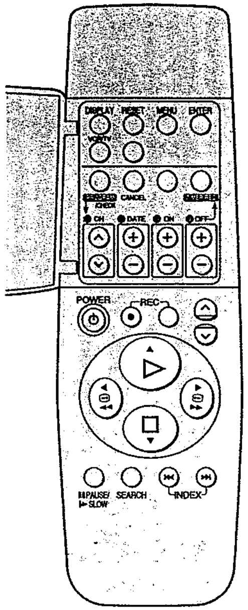

POWER
EJECT
SEARCH
REW
STOP
PLAY
FF
REC
1
4 7 2 3


DISPLAY
RESET
MENU
ENTER
VCR/TV
CANCEL
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX
4
2
3
7
5·6

	Операции	Символы дисплея	
1			Вставьте видеокассету с записью.
2			Начните просмотр изображения.
3			Произведите поиск в прямом направлении нажатием кнопки **FF**. ●Для возвращения в режим нормального воспроизведения нажмите кнопку **PLAY**.
4			Произведите поиск в обратном направлении нажатием кнопки **REW**. ●Для возвращения в режим нормального воспроизведения нажмите кнопку **PLAY**.
5	IIPAUSE/ I►SLOW		Войдите в режим стоп-кадра. ●Нажмите кнопку **PAUSE/SLOW**. ●Для продолжения нормального воспроизведения нажмите кнопку **PLAY** или **PAUSE/SLOW**.
6	IIPAUSE/ I►SLOW		Войдите в режим замедленного воспроизведения. ●Держите нажатой кнопку **PAUSE/SLOW** в течение 2 или более секунд. ●Для продолжения нормального воспроизведения нажмите кнопку **PLAY**.
7			Остановите просмотр изображения.

Примечание:
Если Вы в пункте **3** или **4** держите нажатой кнопку **FF** или **REW**, при нажатии кнопки активизируется поисковое воспроизведение, а при высвобождении кнопки операция возвращается к нормальному воспроизведению.

Другие функции, используемые при воспроизведении

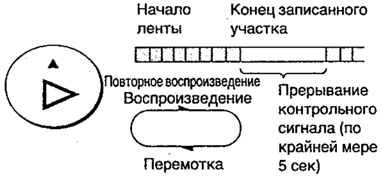

DISPLAY
RESET
MENU
ENTER
VCR/TV
CANCEL
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX

Получение изображения с высокой частотой смены кадров при перемотке в прямом или обратном направлении

Держите кнопку **FF** нажатой в режиме ускоренной перемотки в прямом направлении.
Держите кнопку **REW** нажатой в режиме ускоренной перемотки в обратном направлении.

Воспроизведение записанного участка повторно

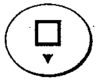
Держите нажатой кнопку **PLAY** в течение 5 или более секунд.
На ТВ экране появляется индикация “R ►”.


Начало ленты
Конец записанного участка
Повторное воспроизведение
Воспроизведение
Перемотка
Прерывание контрольного сигнала (по крайней мере 5 сек)

- ●Для выхода ВКМ из режима повторного воспроизведения нажмите кнопку **STOP**.

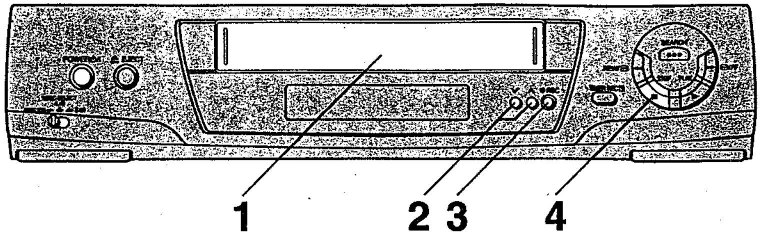
Выброс видеокассеты, используя устройство дистанционного управления

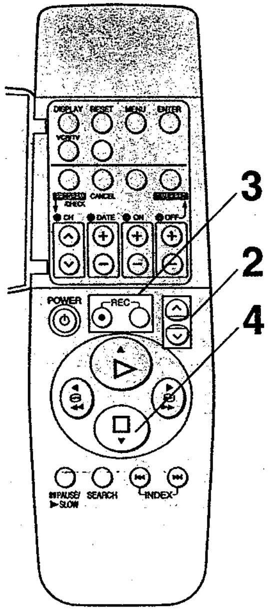
Держите нажатой кнопку **STOP** в течение по крайней мере 3 секунд.



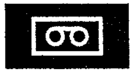
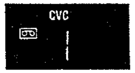
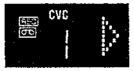
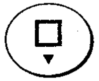
Примечания:
- ●Убедитесь в том, что переключатель системы установлен должным образом. См. стр. 47.
- ●Режимы обзорного воспроизведения в прямом или обратном направлении или замедленного воспроизведения автоматически отключаются по истечении 10 минут, а режим воспроизведения стоп-кадра—по истечении 5 минут.
- ●При обзорном воспроизведении в прямом или обратном направлении на экране могут появиться шумовые полосы или искажения. Однако это не является неполадкой.

Запись в ручном режиме




DISPLAY
RESET
MENU
ENTER
VCR/TV
CANCEL
CH
DATE
ON
OFF
POWER
REC
PAUSE/
SLOW
SEARCH
INDEX
3
2
4

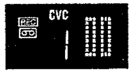
1—29

Операции	Символы дисплея	
1		Вставьте видеокассету с неповрежденным язычком предохранения записи от стирания. • Если кассета уже была вставлена, нажмите кнопку **POWER⏻/I** для включения видеомагнитофона.
2		Выберите ТВ станцию.
3		Начните запись.
4 		Остановите запись.

Прерывание записи

Нажмите кнопку **PAUSE/SLOW** во время записи. Для продолжения записи нажмите эту же кнопку снова.

Символы дисплея



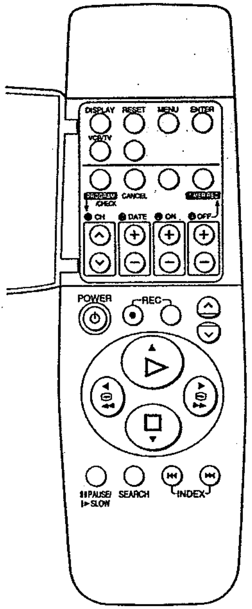
Запись одной ТВ программы во время просмотра другой

1 Обращайтесь к пунктам **1–3** операций записи в ручном режиме.

2 Выберите на Вашем телевизоре ТВ программу, которую Вы желаете смотреть в настоящее время.

Примечания:

- Убедитесь в том, что переключатель системы установлен должным образом. См. стр. 47.
- Если вставлена видеокассета со сломанным язычком предохранения записи от стирания, будет мигать индикация "ꝏ", показывая, что запись невозможна.
- Режим паузы при записи автоматически отключается по истечении 5 минут, и ВКМ возвращается в режим остановки.


DISPLAY
RESET
MENU
ENTER
VCR/TV
CANCEL
CH
DATE
ON
OFF
POWER
REC
PAUSE/
SLOW
SEARCH
INDEX

Запись по таймеру

Использование отображения информации на экране телевизора

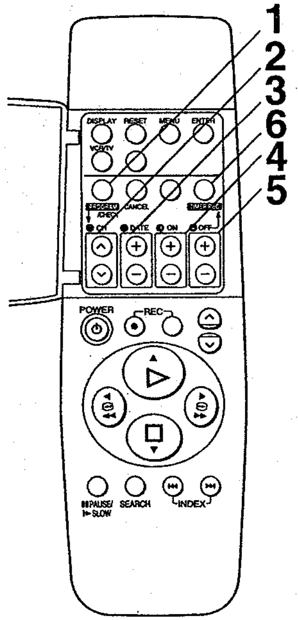
До 8 программ может быть записано в течение последующего месяца путем установки таймера, включая еженедельную и ежедневную запись программ.

Подготовка

- Вставьте видеокассету с неповрежденным язычком предохранения записи от стирания.
- Убедитесь в том, что телевизор включен, и выбран желаемый канал просмотра изображения с видеомагнитофона.
- Включите ВКМ.
- Убедитесь в том, что переключатель системы установлен должным образом. См. стр. 47.

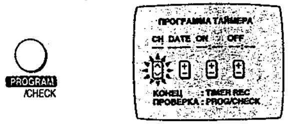
Пример:

Программная позиция (канал);	2
Дата;	27 октября
Начальное время;	20:02
Время окончания;	21:30
(настоящая дата; 16 октября)	

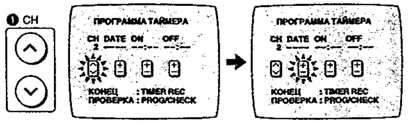

1
2
3
6
4
5
DISPLAY
RESET
MENU
ENTER
VCR/TV
PROGRAM/CHECK
CANCEL
TIMER REC
CH
DATE
ON
OFF
POWER
REC
PAUSE/SLOW
SEARCH
INDEX

Операции **Отображение информации на экране телевизора**

1 Нажмите кнопку **PROGRAM/CHECK**.

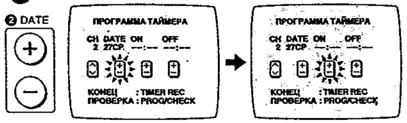

PROGRAM/CHECK
ПРОГРАММА ТАЙМЕРА
CH DATE ON OFF
КОНЕЦ : TIMER REC
ПРОВЕРКА : PROG/CHECK

2 Установите **программную позицию** (канал) “2”.


❶ CH
ПРОГРАММА ТАЙМЕРА
CH DATE ON OFF
2 ---- --:-- --:--
КОНЕЦ : TIMER REC
ПРОВЕРКА : PROG/CHECK

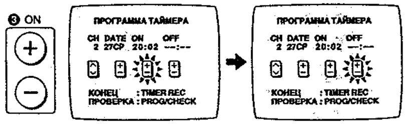
- Следующий пункт будет мигать приблизительно через 2 секунды.

3 Установите **дату** “27/10”.

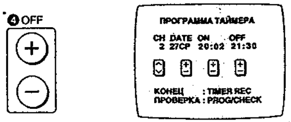

❷ DATE
ПРОГРАММА ТАЙМЕРА
CH DATE ON OFF
2 27CP --:-- --:--
КОНЕЦ : TIMER REC
ПРОВЕРКА : PROG/CHECK

4 Установите **начальное время** “20:02”.

- При удерживании кнопки нажатой индикация изменяется с 30-минутными шагами.


❸ ON
ПРОГРАММА ТАЙМЕРА
CH DATE ON OFF
2 27CP 20:02 --:--
КОНЕЦ : TIMER REC
ПРОВЕРКА : PROG/CHECK

5 Установите **время окончания** “21:30”.


❹ OFF
ПРОГРАММА ТАЙМЕРА
CH DATE ON OFF
2 27CP 20:02 21:30
КОНЕЦ : TIMER REC
ПРОВЕРКА : PROG/CHECK

6 Для активизации записи по таймеру нажмите кнопку **TIMER REC**.

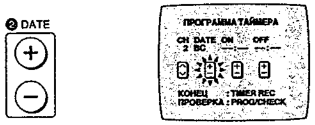
- Появляется сообщение “ПРОГРАММА ЗАВЕРШЕНА.”.
- Если не нажата кнопка **TIMER REC**, ВКМ перейдет в режим готовности к записи по таймеру через приблизительно 1 минуту.

Запись по еженедельному таймеру

В пункте **3** выберите желаемый день нажатием кнопки **DATE –**.

Например, ВС (воскресенье)

Отображение информации на экране телевизора


❷ DATE
ПРОГРАММА ТАЙМЕРА
CH DATE ON OFF
2 ВС --:-- --:--
КОНЕЦ : TIMER REC
ПРОВЕРКА : PROG/CHECK

(ВС=воскресенье, ПН=понедельник, ВТ=вторник, СР=среда, ЧТ=четверг, ПТ=пятница, СБ=суббота)

Запись по ежедневному таймеру

Для этой функции таймера могут быть выбраны несколько дневных групп.

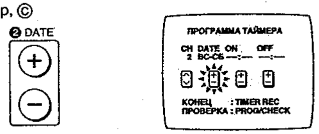
Ⓐ Ежедневная запись с понедельника до пятницы

Ⓑ Ежедневная запись с понедельника до субботы

Ⓒ Ежедневная запись с воскресенья до субботы

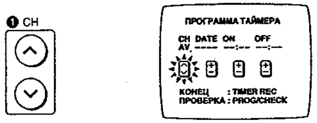
В пункте **3** выберите желаемые дни нажатием кнопки **DATE –**.

Например, Ⓒ


❷ DATE
ПРОГРАММА ТАЙМЕРА
CH DATE ON OFF
2 ВС-СБ --:-- --:--
КОНЕЦ : TIMER REC
ПРОВЕРКА : PROG/CHECK

Запись по таймеру от внешнего источника сигнала

Если запись по таймеру осуществляется от устройства, подсоединенного к входным гнездам аудио/видео, выберите в пункте **2** для программной позиции индикатор AV.


❶ CH
ПРОГРАММА ТАЙМЕРА
CH DATE ON OFF
AV ---- --:-- --:--
КОНЕЦ : TIMER REC
ПРОВЕРКА : PROG/CHECK

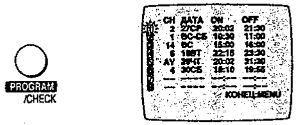
Последовательная установка других программ таймера

Повторите пункты **1–6**.

Проверка программы таймера

- ВКМ должен быть включен, или высвечивается индикатор записи по таймеру “◷”.
- Убедитесь в том, что телевизор включен, и выбран желаемый канал просмотра изображения с видеомагнитофона.

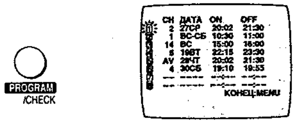
1 Нажмите кнопку **PROGRAM/CHECK** дважды.


PROGRAM/CHECK
CH ДАТА ON OFF
2 27CP 20:02 21:30
1 ВС-СБ 10:30 11:00
14 ВС 15:00 16:00
6 19ВТ 22:15 23:30
AV 29ЧТ 20:02 21:30
4 30СБ 18:10 19:55
КОНЕЦ:MENU

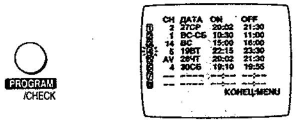
Отмена программы таймера

- ВКМ должен быть включен, либо установлен в режим готовности к записи по таймеру.
- Убедитесь в том, что телевизор включен, и выбран желаемый канал просмотра изображения с видеомагнитофона.

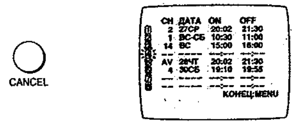
1 Нажмите кнопку **PROGRAM/CHECK** дважды.


PROGRAM/CHECK
CH ДАТА ON OFF
2 27CP 20:02 21:30
1 ВС-СБ 10:30 11:00
14 ВС 15:00 16:00
6 19ВТ 22:15 23:30
AV 29ЧТ 20:02 21:30
4 30СБ 19:10 19:55
КОНЕЦ:MENU

2 Нажимайте кнопку **PROGRAM/CHECK** повторно до тех пор, пока желаемый номер программы таймера не будет высвечиваться и гаснуть.


PROGRAM/CHECK
CH ДАТА ON OFF
2 27CP 20:02 21:30
1 ВС-СБ 10:30 11:00
14 ВС 15:00 16:00
6 19ВТ 22:15 23:30
AV 29ЧТ 20:02 21:30
4 30СБ 19:10 19:55
КОНЕЦ:MENU

3 Нажмите кнопку **CANCEL**.


CANCEL
CH ДАТА ON OFF
2 27CP 20:02 21:30
1 ВС-СБ 10:30 11:00
14 ВС 15:00 16:00
AV 29ЧТ 20:02 21:30
4 30СБ 19:10 19:55
КОНЕЦ:MENU

Примечание:

Если запись по таймеру не выполняется до конца (вследствие недостаточной длины ленты или отмены пользователем), данные программы записи по таймеру будут стерты из памяти через два дня к 4 часам утра.

Однако если в это время активизирована функция записи по таймеру, данные программы записи по таймеру будут стерты в 4 часа утра на следующий день.

Memo

SECTION 2
ADJUSTMENT PROCEDURES

2-1. DISASSEMBLY METHOD

2-1-1. DISASSEMBLY FLOW CHART

This flow chart indicates disassembly steps of the cabinet parts and the circuit boards in order to find the necessary items for servicing.
When reassembling, perform the steps in the reverse order.

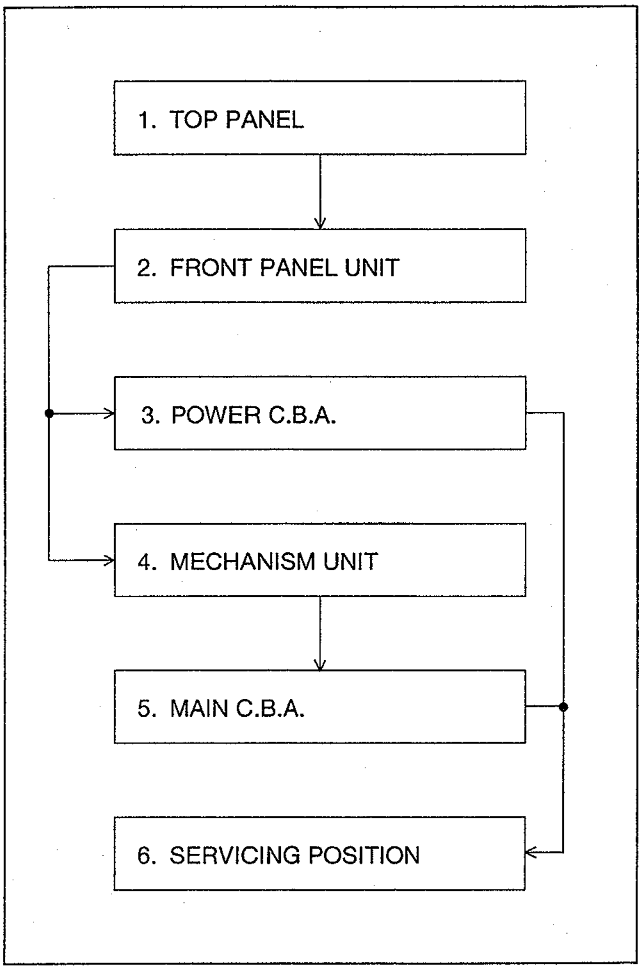

1. TOP PANEL
2. FRONT PANEL UNIT
3. POWER C.B.A.
4. MECHANISM UNIT
5. MAIN C.B.A.
6. SERVICING POSITION

Fig. D1

2-1-2. DETAIL OF DISASSEMBLY METHOD

1. REMOVAL OF THE TOP PANEL

Remove...... 2 Screws (A)

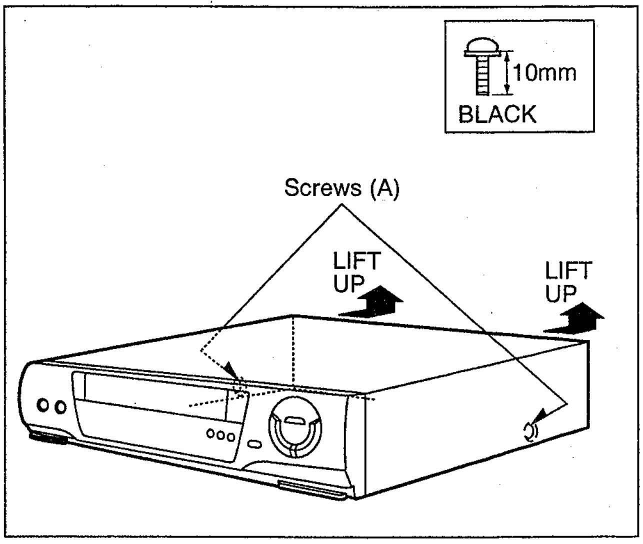

10mm
BLACK
Screws (A)
LIFT UP
LIFT UP

Fig. D2

2. REMOVAL OF THE FRONT PANEL UNIT

Unlock .... 7 Tabs (B)

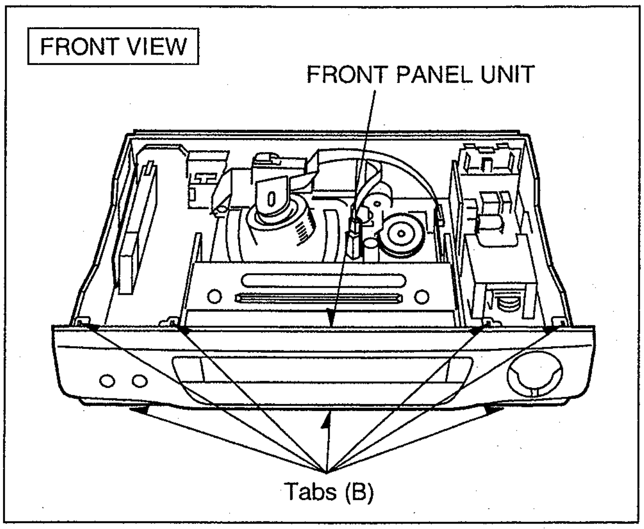

FRONT VIEW
FRONT PANEL UNIT
Tabs (B)

Fig. D3

3. REMOVAL OF THE POWER C.B.A.

Disconnect........Bridge Connector (C)
Unlock.............. 6 Tabs (D)

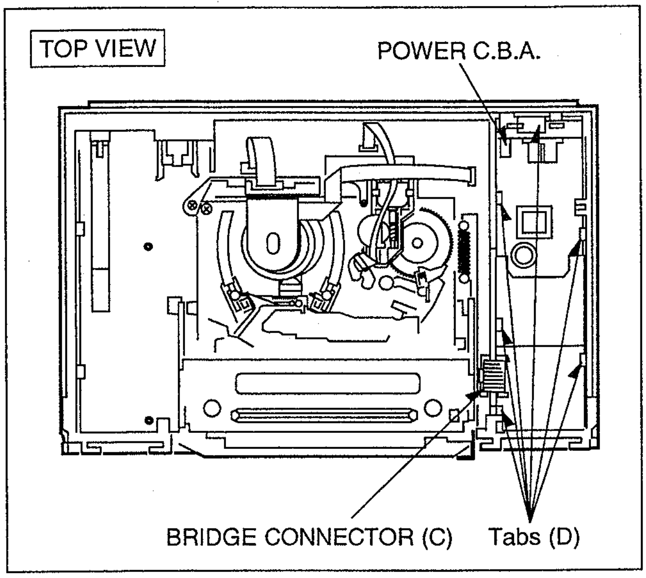

TOP VIEW
POWER C.B.A.
BRIDGE CONNECTOR (C)
Tabs (D)

Fig. D4

4. REMOVAL OF THE MECHANISM UNIT

Remove .... 3 Screws (E)
Remove .... 2 Screws (F)

Note: Keep pressing 2 stoppers on Cassette Holder Plate and Press Cassette Holder Plate to the rear.

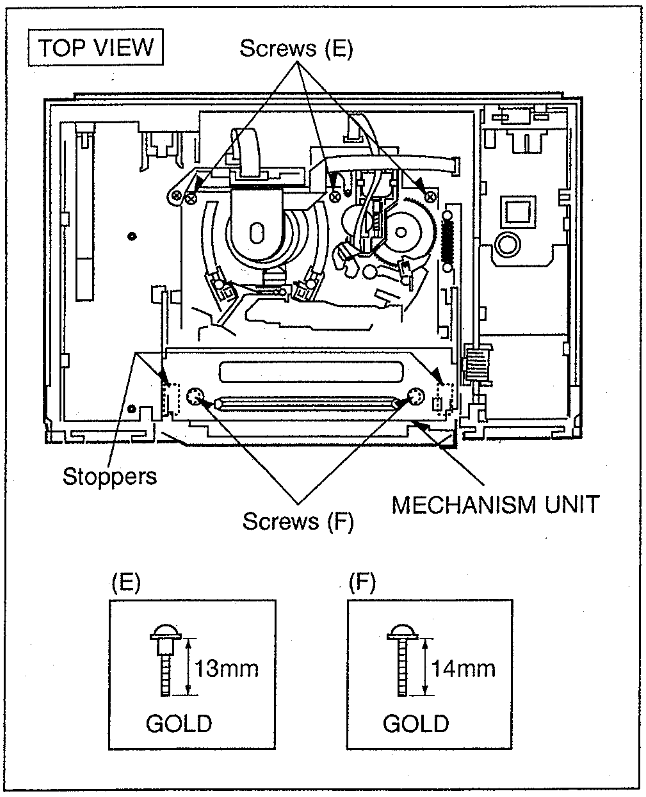

TOP VIEW
Screws (E)
Stoppers
Screws (F)
MECHANISM UNIT
(E)
13mm
GOLD
(F)
14mm
GOLD

Fig. D5

5. REMOVAL OF THE MAIN C.B.A.

Disconnect.... Bridge Connector (C)
Remove .... Screw (G)
Unlock........... 7 Tabs (H)

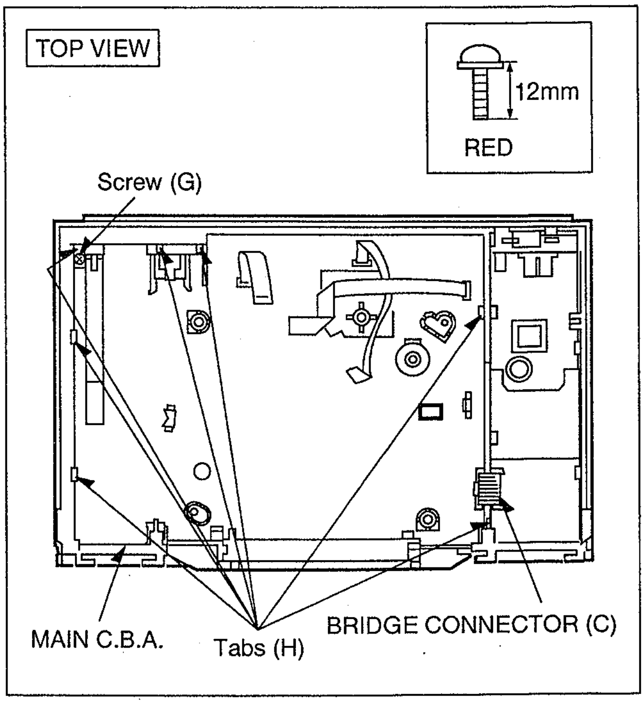

TOP VIEW
12mm
RED
Screw (G)
MAIN C.B.A.
Tabs (H)
BRIDGE CONNECTOR (C)

Fig. D6

6. SERVICING POSITION

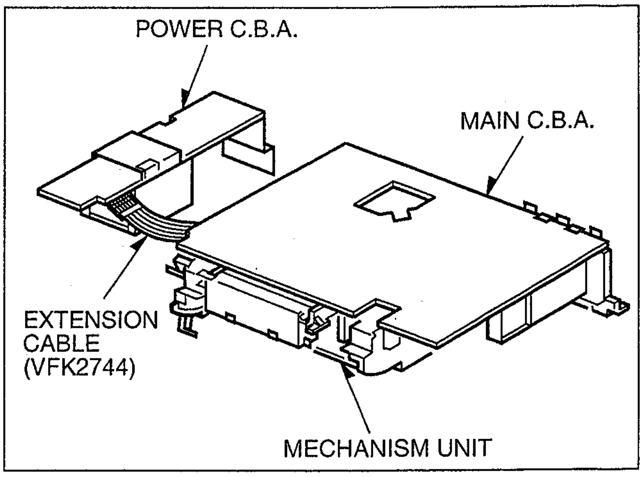

POWER C.B.A.
MAIN C.B.A.
EXTENSION CABLE (VFK2744)
MECHANISM UNIT

Fig. D7

2-2. MECHANICAL ADJUSTMENT PROCEDURES

Refer to the Service Manual for Z Mechanical Chassis.

2-3. ELECTRICAL ADJUSTMENT PROCEDURES

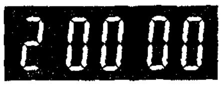
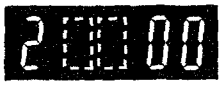
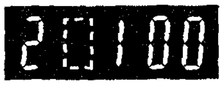
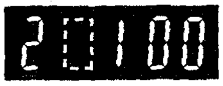
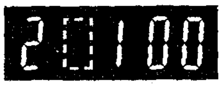
This section provides complete adjustment procedures required for electric circuits of VCR.

Test equipment
To perform electrical adjustments following equipment are required.
(1) VHS alignment tape (PAL: VFJ8125H3F, NTSC: VFM8080HQFP)
(2) Monitor

SERVO SECTION

PG SHIFTER ADJUSTMENT

The adjustment is set in RAM area of Timer microprocessor. In the following case, this adjustment have to be done.
(1) Change of Timer C.B.A.
(2) Change of Timer microprocessor
(3) Change of Cylinder unit

PROCEDURE	DISPLAY
1. To set Service Mode 2, press FF, REW and EJECT buttons simultaneously three times.	
2. Press EJECT button for more than three seconds.	
3. Indicate 1 in the digit of minute by pressing the channel up/down buttons. When the channel up button is pressed, 1 will be indicated in the digit of minute.	
4. Insert VHS alignment tape.	
5. This adjustment is automatically started after VCR goes to PLAY mode (During the adjustment, the picture can be observed on the monitor).	
6. When the adjustment is terminated, the following operation will be activated. Adjustment completed: The cassette tape will be ejected. Adjustment incompleted: Continues Play mode more than 5 seconds It should be Pressed Stop button in order to unload compulsory.	
7. Press FF, REW and EJECT buttons simultaneously sixth times to release Service Mode 2. In case of the incompleted adjustment, indicate the Self-Test Indication Display as follows. Check Servo/System Control circuit and Cylinder unit.	

Self-Test Indication Display
F20: NG1 on PG Automatic Adjustment
Cylinder unit does not rotate stability.
F21: NG2 on PG Automatic Adjustment
Vertical Sync Signal has come off more than 5 seconds on the tape.
F22: NG3 on PG Automatic Adjustment
Head position of Cylinder unit is out of specification.
F23: NG4 on PG Automatic Adjustment
It does not lock in Servo Circuit within 5 seconds after PG Automatic Adjustment started.

СЕКЦИЯ 2
ПРОЦЕДУРЫ НАСТРОЙКИ

2-1. МЕТОД РАЗБОРКИ

2-1-1. СХЕМА ПОСЛЕДОВАТЕЛЬНОСТИ ОПЕРАЦИЙ РАЗБОРКИ

Данная схема последовательности операций указывает порядок разборки частей корпуса и принципиальных схем, чтобы найти небходимые пункты для обслуживания.
При повторной сборке, проводите операции в обратном порядке.

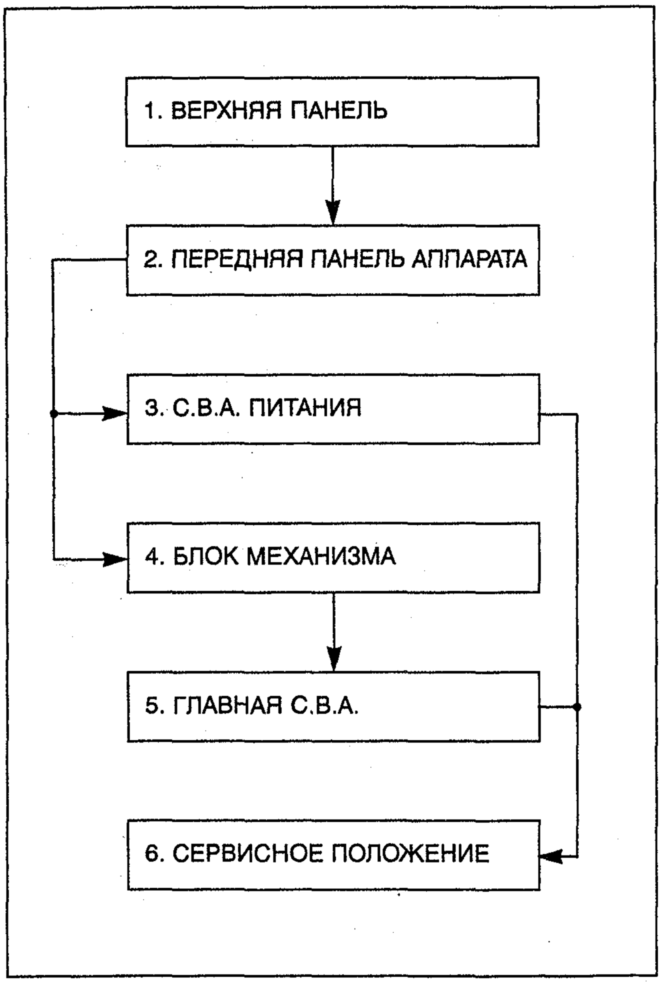

1. ВЕРХНЯЯ ПАНЕЛЬ
2. ПЕРЕДНЯЯ ПАНЕЛЬ АППАРАТА
3. С.В.А. ПИТАНИЯ
4. БЛОК МЕХАНИЗМА
5. ГЛАВНАЯ С.В.А.
6. СЕРВИСНОЕ ПОЛОЖЕНИЕ

Рис. D1

2-1-2. ДЕТАЛИ МЕТОДА РАЗБОРКИ

1. УДАЛЕНИЕ ВЕРХНЕЙ ПАНЕЛИ

Удалите ...... 2 винта (A)

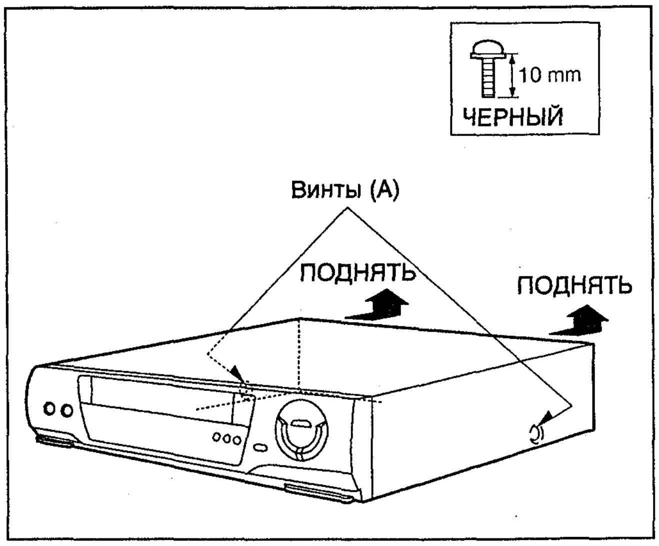

10 mm
ЧЕРНЫЙ
Винты (A)
ПОДНЯТЬ
ПОДНЯТЬ

Рис. D2

2. УДАЛЕНИЕ ПЕРЕДНЕЙ ПАНЕЛИ АППАРАТА

Откройте ...... 7 ушек (B)

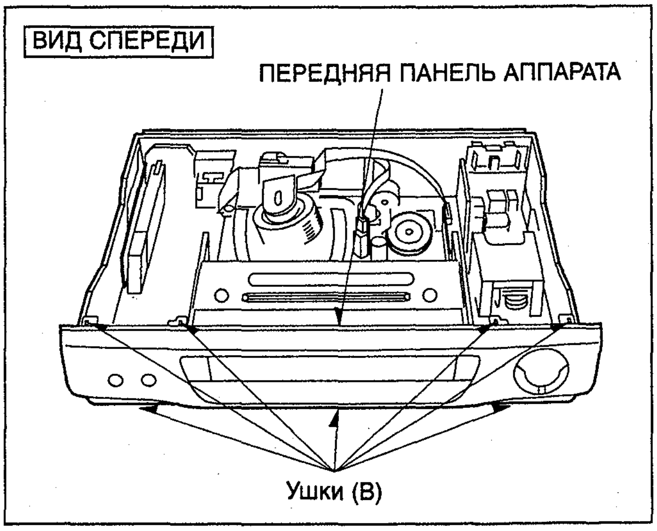

ВИД СПЕРЕДИ
ПЕРЕДНЯЯ ПАНЕЛЬ АППАРАТА
Ушки (B)

Рис. D3

3. УДАЛЕНИЕ С.В.А. ПИТАНИЯ

Отсоедините ...... Мостиковый соединитель (C)
Откройте ...... 6 ушек (D)

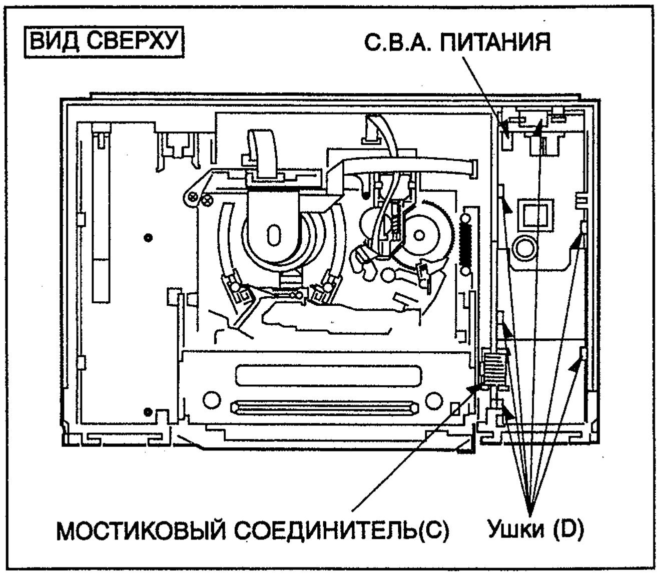

ВИД СВЕРХУ
С.В.А. ПИТАНИЯ
МОСТИКОВЫЙ СОЕДИНИТЕЛЬ(C)
Ушки (D)

Рис. D4

4. УДАЛЕНИЕ БЛОКА МЕХАНИЗМА

Удалите ...... 3 винта (E)
Удалите ...... 2 винта (F)

Примечание: Держите нажатыми 2 стопора на пластине держателя кассеты и нажимайте ее к задней стенке.

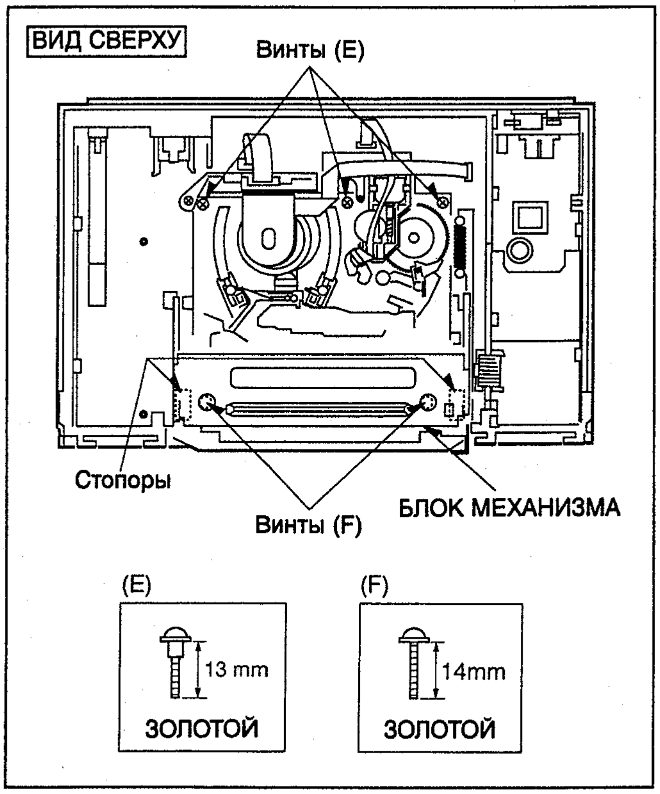

ВИД СВЕРХУ
Винты (E)
Стопоры
Винты (F)
БЛОК МЕХАНИЗМА
(E)
13 mm
ЗОЛОТОЙ
(F)
14mm
ЗОЛОТОЙ

Рис. D5

5. УДАЛЕНИЕ ГЛАВНОЙ С.В.А.

Отсоедините ...... Мостиковый соединитель
Удалите ...... Винт (G)
Откройте ...... 7 ушек (H)

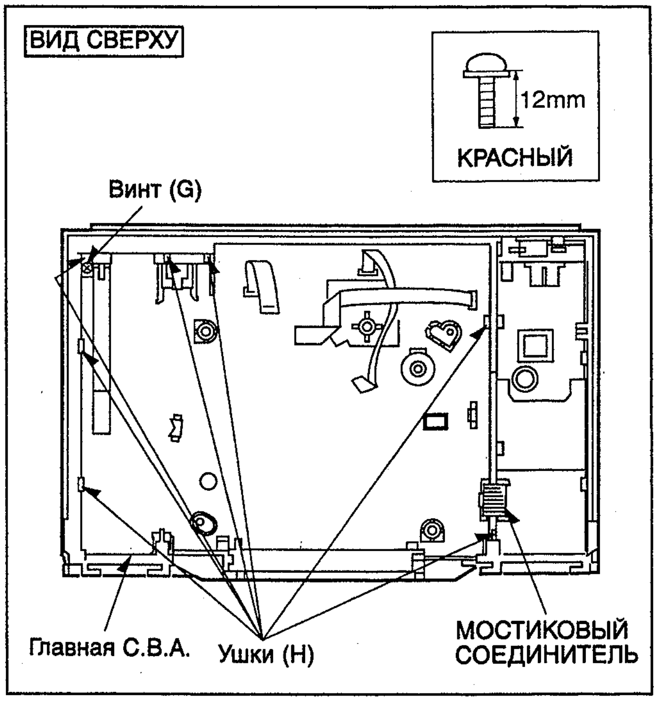

ВИД СВЕРХУ
12mm
КРАСНЫЙ
Винт (G)
Главная С.В.А.
Ушки (H)
МОСТИКОВЫЙ СОЕДИНИТЕЛЬ

Рис. D6

6. СЕРВИСНОЕ ПОЛОЖЕНИЕ

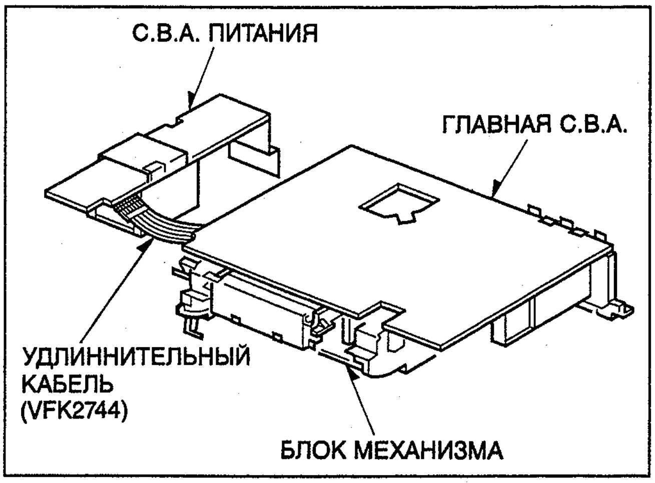

С.В.А. ПИТАНИЯ
ГЛАВНАЯ С.В.А.
УДЛИННИТЕЛЬНЫЙ КАБЕЛЬ (VFK2744)
БЛОК МЕХАНИЗМА

Рис. D7

2-2. ПРОЦЕДУРЫ МЕХАНИЧЕСКОЙ НАСТРОЙКИ

Обращайтесь к Сервисной Инструкции для Механического Шасси Z.

2-3. ПРЦЕДУРЫ ЭЛЕКТРИЧЕСКОЙ РЕГУЛИРОВКИ

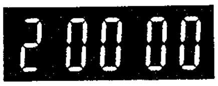
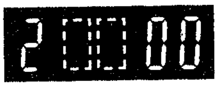
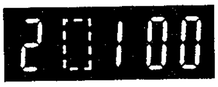
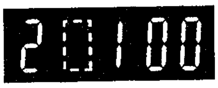
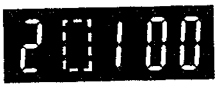
Данная секция предоставляет полную процедуру регулировки, необходимую для электрических схем КВМ.

Оборудование для теста
Для проведения электрических регулировок, необходимо следующее оборудование.
(1) Измерительная лента VHS(ПАЛ: VFJ8125H3F, НТСЦ: VFM8080HQFP)
(2) Монитор

СЕРВОСЕКЦИЯ

РЕГУЛИРОВКА ПЕРЕКЛЮЧАТЕЛЯ PG

Регулировка устанавливается в районе RAM (ЗППВ) микропроцессора таймера. Эту регулировку необходимо провести в следующем случае.
(1) Замена С.В.А. таймера
(2) Замена микропроцессора таймера
(3) Замена блока цилиндра

ПРОЦЕДУРА	ДИСПЛЕЙ
1. Для установки Сервисного Режима 2 нажмите одновременно три раза кнопки "FF","REW" и "EJECT".	
2. Нажимайте кнопку "EJECT" более, чем три секунды.	
3. Нажимайте кнопки канала вверх/вниз для обозначения 1 в разряде минут. Когда нажата кнопка канала вверх, появится индикация 1 в разряде минут.	
4. Вставьте измерительную ленту VHS.	
5. Регулировка начнется автоматически, как только КВМ войдет в режим ВОСПРОИЗВЕДЕНИЯ (Во время регулировки, изображение можно смотреть по монитору).	
6. По завершении регулировки, активируются следующие операции. Регулировка завершена: Кассетная лента будет извлечена. Регулировка не завершена: Если режим воспроизведения продолжается более,чем 5 секунд, надо нажать на кнопку "Stop", для обязательной разгрузки.	
7. Нажмите одновременно три раза кнопки "FF".REW" и "EJECT" для отмены Сервисного Режима 2. В случае незавершенной регулировки, вызовите на экран Дисплей Индикации Самотестирования следующим образом. Проверьте схему контроля Сервосистемы и блок Цилиндра.	

Дисплей индикации самотестирования
F20: NG1 на автоматической регулировке PG
Блок цилиндра не вращается стабильно.
F21: NG2 на автоматической регулировке PG
Вертикальный сканирующий сигнал выходит на ленту более 5 секунд.
F22: NG3 на автоматической регулировке PG
Положение головки блока цилиндра не соответствует спецификации.
F23: NG4 на автоматической регулировке PG
В сервосхеме не произошло блокировки в течение 5 секунд после начала автоматической регулировки PG.

SECTION 3
BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS

3-1. ABBREVIATIONS

443NT [L]	4.43 NTSC Ⓛ
A. COMP	AUDIO COMPONENT SIGNAL
A. COMPO	AUDIO COMPONENT SIGNAL
A. D.P [L]	AUDIO DUBBING PAUSE Ⓛ
A. D/L [L]	AUDIO DUBBING PAUSE Ⓛ
A. DEF [S]	AUDIO DEFEAT
A. DEF [S] [L]	AUDIO DEFEAT
A. DUB P [L]	AUDIO DUBBING PAUSE Ⓛ
A. DUB [H]	AUDIO DUBBING Ⓗ
A. ERASE	AUDIO ERASE
A. H. SW	AUDIO HEAD SWITCHING PULSE
A. HEAD [R]	AUDIO HEAD (REC)
A. HEAD [W]	AUDIO HEAD (PLAY)
A. IN [L]	AUDIO INPUT (L)
A. IN [R]	AUDIO INPUT (R)
A. MUT [H]	AUDIO MUTE Ⓗ
A. MUTE [H]	AUDIO MUTE Ⓗ
A. OUT [L]	AUDIO OUTPUT (L)
A. OUT [R]	AUDIO OUTPUT (R)
A. RF OUT	AUDIO RF SIGNAL OUTPUT
A/VS/S. DATA	AV SW/SERIAL DATA
AC ONLINE	AC ONLINE
AC. O/EE. H	AC ONLINE/EE Ⓗ
AFC S C	AFC S CURVE
AFC [S]	AFC S CURVE
AFC. DEF	AFC DEFEAT
ARFC OUT	AUDIO RF SIGNAL OUTPUT
ART. V	ARTIFICIAL VERTICAL SYNC SIGNAL
ART. V. MM	ARTIFICIAL VERTICAL SYNC SIGNAL MONO MULTI
ART. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL Ⓗ/NORMAL
AT. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL
ATSW/TEST/NOR/SE	TEST/NORMAL/SERVICE
AUDIO IN [L]	AUDIO INPUT (L)
AUDIO IN [R]	AUDIO INPUT (R)
AUDIO OUT [L]	AUDIO OUTPUT (L)
AUDIO OUT [R]	AUDIO OUTPUT (R)
AUDIO SELECT [H]	AUDIO SELECT Ⓗ
AUDIO. L	AUDIO (L)
AUDIO. R	AUDIO (R)
AV CNT	AV CONTROL
AV CTL	AV CONTROL
AV CTL/S. CLK	AV CONTROL/SERIAL CLOCK
AV. C.M.	AV CONTROL MODE
AVCNT/METER. R	AV CONTROL/LEVEL METER (R)
AVSW/METER. L	AV SW/LEVEL METER (L)
B MODE. H	B MODE Ⓗ
B.G.P	BURST GATE PULSE
BACKUP 5V	BACK UP 5V
BAND. U.E.	BAND U
BANDVL. D	BAND VL
BI/MI [L]	BILINGUAL/MIX Ⓛ
BIL	BILINGUAL
BIL [L]	BILINGUAL Ⓛ
BIL. [H]	BILINGUAL Ⓗ
BIL/M1 [L]	BILINGUAL Ⓛ
BS CLOCK	BS CLOCK
BS DATA	BS DATA
BS LCH IN	BS L CHANNEL INPUT
BS MIX [H]	BS MIX Ⓗ
BS MON [H]	BS MONITOR Ⓗ
BS MONI [H]	BS MONITOR Ⓗ
BS RCH IN	BS R CHANNEL INPUT
BS VIDEO	BS VIDEO SIGNAL
BS VIDEO/BS1	BS VIDEO SIGNAL
BS [H]	BS Ⓗ
BS. LEVEL	BS LEVEL
BS. M [H]	BS MONITOR Ⓗ
BS/VTR [H]	BS/VTR Ⓗ
BUS CLK	BUS CLOCK
BUS LSN	BUS LISTEN
BUS TLK	BUS TALK
BUZZER	BUZZER
CAP EC	CAPSTAN TORQUE CONTROL
CAP M GND	CAPSTAN MOTOR GND
CAP. ET	CAPSTAN TORQUE CONTROL
CAP. FG1	CAPSTAN FG1 PULSE
CAP. FG2	CAPSTAN FG2 PULSE
CAS. SW	CASSETTE SW
CCN	PLAYBACK CONTROL SIGNAL (−)
CCP	PLAYBACK CONTROL SIGNAL (+)
CHM	CONTROL SIGNAL (+)
CHP	CONTROL SIGNAL (−)
CINEM [L]	CINEMA Ⓛ
CINEMA [L]	CINEMA Ⓛ
CINEMA/MIX	CINEMA/MIX
CKL	RATCH LOCK
CKS	SHIFT LOCK
CL	CLOCK
CLK	CLOCK
CLK (C.G)	CLOCK
CLOCK. IN	CLOCK INPUT
CLP	CLAMP
COL/B/W/NOR	COLOUR/BLACK & WHITE/NORMAL
COLOR [H]	COLOUR Ⓗ
CONV	CONVERTOR
CS	CHIP SELECT
CTL GND	CONTROL GND
CTL HEAD [+]	CONTROL HEAD (+)
CTL HEAD [−]	CONTROL HEAD (−)
CTL [+]	CONTROL HEAD (+)
CTL [−]	CONTROL HEAD (−)
CUE BIAS	CUE BIAS
CURRENT LIM	CURRENT LIMMITER
CYL ET	CYLINDER TORQUE CONTROL

CYL GND	CYLINDER GND
D.F.M. REC [H]	DELAIED FM RECORDING Ⓗ
D. FM REC [L]	DELAIED FM RECORDING Ⓛ
D. GND	DIGITAL GND
D. REC [H]	DELAYED RECORDING Ⓗ
D4/S. LED	D4/STILL LED
D4/STILLED	D4/STILL LED
DAC [CLK]	TUNER DAC (CLOCK)
DAC/FSCS	TUNER DAC/FS CHIP SELECT
DAREC [H]	DELAYED AUDIO RECORDING Ⓗ
DATA	DATA
DECODER [L]	DECODER (L)
DECODER [R]	DECODER (R)
DEW	DEW
DEW SNS	DEW SENSOR
DFMRE [H]	DELAYED FM AUDIO RECORDING Ⓗ
E. REC 5V	EXCEPT RECORDING 5V
EC	ERROR TORQUE CONTROL
ECR	ERROR TORQUE CONTROL REFERENCE VOLTAGE
EDT TRIG [L]	EDIT TRIGGER Ⓛ
EDIT [H]	EDIT Ⓗ
EE [H]	EE Ⓗ
EE [H]/INS [M]	EE Ⓗ/INSERT Ⓜ
EE. VV. TR	EE/VV/TRICK PLAY
EJECT. PO	EJECT POSITION
EJECT/VDET	EJECT/REVERSE SLOW LOCK
ENV. SEL	ENVELOPE SELECT
ENVE. OUT	ENVELOPE OUTPUT
ENVE. SEL	ENVELOPE SELECT
ENV SELECT	ENVELOPE SELECT
EP [H]	LP Ⓗ
EP/LP [H]	LP Ⓗ
EP/LP/SP	LP/SP
EP/SS [H]	LP/SLOW/STILL/STOP Ⓗ
EPROMCS	EPROM CHIP SELECT
EX. REC 5V	EXCEPT RECORDING 5V
FF/REW [L]	FIRST FORWARD/REWIND Ⓛ
FG1 IN	FG1 PULSE INPUT
FG2 IN	FG2 PULSE INPUT
FILTER ADJUSTMENT	FILTER ADJUSTMENT
FLY ERASE [H]	FLYING ERASE HEAD ON Ⓗ
FLY ON [H]	FLYING ERASE HEAD ON Ⓗ
FLY. E [H]	FLYING ERASE HEAD ON Ⓗ
FM MUT [H]	FM AUDIO MUTE Ⓗ
FM MUTE [H]	FM AUDIO MUTE Ⓗ
FM OUT [L]	FM OUTPUT (L)
FM OUT [R]	FM OUTPUT (R)
FM PACK OUT [L]	FM PACK OUTPUT (L)
FM PACK OUT [R]	FM PACK OUTPUT (R)
FM/BS SEL [L]	FM/BS SELECT (L)
FM/BS SEL [R]	FM/BS SELECT (R)
FS. CLK	FS CLOCK
FUL. E [H]	FULL ERASE HEAD ON Ⓗ
FULL. E [H]	FULL ERASE HEAD ON Ⓗ

FULL. E. 12V	FULL ERASE 12V
GND [A]	GND (ANALOG)
GND [TU]	GND (TUNER)
GND/N. SW. 12V	GND/NON SW 12V
H. SYNC	HORIZONTAL SYNC
H. AMP. SW	HEAD AMP SW PULSE
H. P <R>	HEAD PHONE (R)
H. P <L>	HEAD PHONE (L)
H. P GND	HEAD PHONE GND
H. P OUT [L]	HEAD PHONE OUTPUT (L)
H. P OUT [R]	HEAD PHONE OUTPUT (R)
H. SW	HEAD SW PULSE
HEAD PHONE [L]	HEAD PHONE (L)
HEAD PHONE [R]	HEAD PHONE (R)
HEAD SW	HEAD SW
HEATER [+]	HEATER (+)
HEATER [–]	HEATER (–)
HSS	HORIZONTAL SYNC SIGNAL
HTR [+]	HEATER (+)
HTR [–]	HEATER (–)
I RFE	REFERENCE CURRENT
ICL	CONTROL AGC CIRCUIT
IF	INTERMEDIATE FREQUENCY
IN SELA1	INPUT SELECT A1 POSITION
IN SELA2	INPUT SELECT A2 POSITION
IN SELA3	INPUT SELECT A3 POSITION
INS L/R [L]	INSERT Lch/Rch Ⓛ
INS. [H]	INSERT Ⓗ
INSEL A1	INPUT SELECT A1 POSITION
INSEL A2	INPUT SELECT A2 POSITION
INSERT	INSERT
INSERT [H]	INSERT Ⓗ
IO CS	INPUT/OUTPUT CHIP SELECT
JOG1	JOG1
JOG S3 LED/FOWRD	JOG LED/FORWARD LED
JOG/F. LED	JOG LED/FORWARD LED
JSB [H]	JSB Ⓗ
JST. CLCK	JUST CLOCK
JST. CLK	JUST CLOCK
JST. CLOCK	JUST CLOCK
L. OUT	Lch OUTPUT
L. CH [H]	Lch Ⓗ
L. CH [L]	Lch Ⓛ
LED (MAIN)	LED (MAIN)
LED (STEREO)	LED (STEREO)
LED (SUB)	LED (SUB)
LED CKL	LED SERIAL CLOCK
LED CKS	LED SERIAL CLOCK
LED DATA	LED SERIAL DATA
LINE IN 1 [L]	LINE INPUT 1 (L)
LINE IN 1 [R]	LINE INPUT 1 (R)
LINE IN 2 [L]	LINE INPUT 2 (L)
LINE IN 2 [R]	LINE INPUT 2 (R)
LINE IN V	LINE INPUT VIDEO
LINE IN [L]	LINE INPUT (L)

LINE IN [R]	LINE INPUT (R)
LINE OUT [L]	LINE OUTPUT (L)
LINE OUT [R]	LINE OUTPUT (R)
LP [H]	LP Ⓗ
LPTRI [L]	LP TRICK PLAY Ⓛ
Lch/A. DUB	Lch/AUDIO DUBBING
M GND	MOTOR GND
M REG	MOTOR REGULATOR
MAIN OUT	MAIN OUTPUT
MAIN [L]	MAIN Ⓛ
MAIN/MONO	MAIN/MONAURAL
MAX IN	MAXIMAM INPUT
MES [H]	MESECAM Ⓗ
MESE [H]	MESECAM Ⓗ
MESE [L]	MESECAM Ⓛ
METER 5V	LEVEL METER 5V
METER [L]	LEVEL METER (L)
METER [R]	LEVEL METER (R)
METER. L/AVS	LEVEL METER (L)
METER. R/AVC	LEVEL METER (R)
MI/BI [L]	MIX Ⓗ/BILIGUAL
MIC GND	MIC GND
MIC IN	MIC INPUT
MIC IN [L]	MIC INPUT (L)
MIC IN [R]	MIC INPUT (R)
MIC [H]	MIC Ⓗ
MIX [H]	MIX Ⓗ
MIX [H]/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ
MIX/CINE	MIX Ⓗ/CINEMA SOUND Ⓛ
MIX/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ
MN. H/M. L	MONAURAL Ⓗ/MAIN Ⓛ
MN. H/MAI. L	MONAURAL Ⓗ/MAIN Ⓛ
MN2/MES. L	MONAURAL 2/MESECAM Ⓛ
MODE SEL	AUDIO MODE SELECT
MODE SW	AUDIO MODE SW
MODE. S. IN	AUDIO MODE SELECT INPUT
MODE. S. OUT	AUDIO MODE SELECT OUTPUT
MONO [H]	MONAURAL Ⓗ
MONO [H]/MAIN [L]	MONAURAL Ⓗ/MAIN Ⓛ
MONO2 [L]	MONAURAL 2
MONO2/MESE [FM(L)]	MONAURAL 2/MESECAM (FM Ⓛ)
MOTOR GND	MOTOR GND
MUTE	MUTE
N. A. REC [L]	NORMAL AUDIO RECORDING
N. SW 12V	NON SW 12V
N. SW. 5. DET	NON SW 5V DETECT
NICAM	NICAM
NICAM [L]	NICAM Ⓛ
NOL [H]	PAL Ⓗ/4.43 NTSC Ⓜ/3.58 NTSC Ⓛ
NOR/SOFT [H]	NORMAL/SOFT TAPE PLAY Ⓗ
NORMAL [H]	NORMAL Ⓗ
NR BIAS	NR BIAS
NTSC [L]	NTSC Ⓛ
OCH	CONTROL AGC CIRCUIT
OUT	OUTPUT

P-OFF [H]	POWER OFF Ⓗ
P-OFF [L]	POWER OFF Ⓛ
P. FAIL	POWER FAILURE DETECT
P. OFF [H]	POWER OFF Ⓗ
P. OFF [L]	POWER OFF Ⓛ
PAL [H]	PAL Ⓗ
PAL [L]/NTSC [H]	PAL Ⓛ/NTSC Ⓗ
PB ADJ OUT	PLAYBACK ADJUST OUTPUT
PB OUT	PLAYBACK OUTPUT
PB. H	PLAYBACK Ⓗ
PFG	PG/FG
PHOTSN +B	PHOTO SENSOR +B
PICT. CNT	PICTURE CONTROL
PLAY LED/RVS LED	PLAY LED/REVERSE LED
PLAY. PO	PLAY POSITION
PLAY/R. LED	PLAY LED/REVERSE LED
PLY/DEW	PLAY/DEW Ⓗ
POWER OFF [L]	POWER OFF Ⓛ
PREROLL [H]	PREROLL Ⓗ
PWRFAIL	POWER FAILURE DETECT
R. CH [H]	Rch Ⓗ
R. CH [L]	Rch Ⓛ
R. ST	RESET
R/S/F	REVERSE Ⓗ/STOP Ⓜ/FORWARD Ⓛ
RCH [H]	Rch Ⓗ
REC 12V	RECORDING 12V
REC CHROMA	RECORDING CHROMINANCE SIGNAL
REC H	RECORDING Ⓗ
REC IN	RECORDING INPUT
REC OUT [L]	RECORDING OUTPUT Ⓛ
REC START	RECORDING START
REC VR [C]	RECORDING VOLUME (COMMON)
REC VR [L]	RECORDING VOLUME (L)
REC VR [R]	RECORDING VOLUME (R)
REC Y	RECORDING LUMINANCE SIGNAL
REC [H]	RECORDING Ⓗ
REC. C	RECORDING CHROMINANCE SIGNAL
REC. Y	RECORDING LUMINANCE SIGNAL
REC/EE CTL	RECORDING/EE CONTROL
REEL-T	REEL PULSE (TAKE-UP)
REEL-S	REEL PULSE (SUPPLY)
REGULATOR FILTER	REGULATOR FILTER
RESET	RESET
REV M F/R	REVIEW MOTOR FORWARD/REVERSE
REV M V1	REVIEW MOTOR V1
REV M V2	REVIEW MOTOR V2
REV MOTOR F/R	REVIEW MOTOR FORWARD/REVERSE
REV MOTOR V1	REVIEW MOTOR V1
REV MOTOR V2	REVIEW MOTOR V2
REV MOTOR [+]	REVIEW MOTOR (+)
REV MOTOR [–]	REVIEW MOTOR (–)
REV. M. GND	REVIEW MOTOR GND
RF. CHROMA	RF CHROMINANCE SIGNAL

RF OUT	RF OUTPUT
RF Y	RF LUMINANCE SIGNAL
RF. Y. IN	RF LUMINANCE SIGNAL INPUT
RF. Y. OUT	RF LUMINANCE SIGNAL OUTPUT
ROTAR. SW	ROTARY SW
ROTARY	ROTARY SW
RST	RESET
RST [L]	RESET Ⓛ
Rch/INST	Rch/INSERT
S IN	SERIAL DATA INPUT
S OUT	SERIAL DATA OUTPUT
S-PHOTO	SUPPLY PHOTO TRANSISTOR
S-RL. PLS	SUPPLY REEL PULSE
S. CLK	SERIAL CLOCK
S. CLK/AV	SERIAL CLOCK/AV
S. DATA	SERIAL DATA
S. DATA/A	SERIAL DATA
S. PHOTO	SUPPLY PHOTO TRANSISTOR
S. TAB [L]	SAFETY TAB SW ON Ⓛ
S/P/N	SECAM/PAL/NTSC
SC IN	SERIAL CLOCK INPUT
SC OUT	SERIAL CLOCK OUTPUT
SCK SELECT	SERIAL CLOCK SELECT
SEL OUT [L]	SELECT OUTPUT (L)
SEL OUT [R]	SELECT OUTPUT (R)
SHUTTLE 1	SHUTTLE 1
SIF	SOUND INTERMEDIATE FREQUENCY
SLMUT [H]	INPUT SELECT MUTE Ⓗ
SLNID [+]	SOLENOID (+)
SLNID [−]	SOLENOID (−)
SLW TR. MM	SLOW TRACKING MONO MULTI
SLW TR. REF	SLOW TRACKING REFERENCE VOLTAGE
SNS. GND	SENSOR GND
SOFT [H]	SOFT TAPE PLAY Ⓗ
SOFT [H]/NORMAL	SOFT TAPE PLAY Ⓗ/NORMAL Ⓗ
SOLENOID ON [L]	SOLENOID ON Ⓛ
SP [H]	SP Ⓗ
SP/L/SLP	SP/LP
SSS [L]	SLOW/STILL/STOP
STEREO LED	STEREO LED
STEREO [H]	STEREO Ⓗ
STEREO [L]	STEREO Ⓛ
STOP. PO	STOP POSITION
STOP/5V	STOP POSITION/5V
STOP1/TAPE SEL	STOP1 POSITION/TAPE SELECT
STOP1/PAL:ST	STOP1 POSITION/PAL
STOP2. PO	STOP 2 POSITION
STOP2/S-TAB	STOP 2 POSITION/SAFETY TAB SW
STREO [H]	STEREO Ⓗ
SUB BIAS	SUB BIAS
SUB. SW	SUB SW
SVHS CAS [L]	S-VHS CASSETTE Ⓛ
SW. 5. DET	SW 5V DETECT
SYNC [L]	SYNC Ⓛ

SYSCON 5V	SYSTEM CONTROL 5V
SYSTEM	SYSTEM SW
T-PHOTO	TAKE-UP PHOTO TRANSISTOR
T-RL. PLS	TAKE-UP REEL PULSE
T. BUSCLK	TIMER BUS CLOCK
T. BUSLSN	TIMER BUS LISTEN
T. BUSTLK	TIMER BUS TALK
T. END [L]	TAPE END Ⓛ
T. PHOTO	TAKE-UP PHOTO TRANSISTOR
TAPE END [L]	TAPE END Ⓛ
TAPE END [L]/CAM	TAPE END Ⓛ/CAMERA PAUSE
TEST	TEST MODE
TPZ	TRAPEZOIDAL WAVE CIRCUIT
TRIC [L]	TRIC PLAY Ⓛ
TRICK [L]	TRIC PLAY Ⓛ
TRK. ENV	AUTO TRACKING ENVELOPE DETECT
TU. AUDIO	TUNER AUDIO
TU. GND	TUNER GND
TU. V. IN	TUNER VIDEO SIGNAL INPUT
TU. VIDEO	TUNER VIDEO
TUN NOR IN	TUNER NORMAL INPUT
TUN R	TUNER AUDIO (R)
TUN. AUDIO IN	TUNER AUDIO INPUT
TUNER 12V	TUNER 12V
TUNER L	TUNER AUDIO (L)
TUNER V IN	TUNER VIDEO SIGNAL INPUT
TUNER [L]	TUNER AUDIO (L)
TUNER [N]	TUNER AUDIO (NORMAL)
TUNER [R]	TUNER AUDIO (R)
TUNER. 12	TUNER 12V
TUOFF [H]	TUNER OFF Ⓗ
TV. AUDIO	TV AUDIO
TV/VTR	TV/VTR
TXTON [L]	TEXT ON Ⓛ
U. REG45V	UNREGULATOR 45V
UNREG	UNREGULATOR
UNREG19V	UNREGULATOR 19V
V. REF	REFERENCE VOLTAGE
V. EE [H]	VIDEO EE Ⓗ
V. EE [L]	VIDEO EE Ⓛ
VCO REF	REFERENCE OSCILLATER
VD. IN	VIDEO SIGNAL INPUT
VD. OUT	VIDEO SIGNAL OUTPUT
VIDEO EE [L]	VIDEO EE Ⓛ
VIDEO IN	VIDEO SIGNAL INPUT
VIDEO OUT	VIDEO SIGNAL OUTPUT
VM	MOTOR VOLTAGE
VM DOWN [L]	MOTOR VOLTAGE DOWN Ⓛ
VSS	VERTICAL SYNC SIGNAL
VTR [H]	VTR Ⓗ
VTR. 12V	VTR 12V
X IN	OSCILLATOR INPUT
X OUT	OSCILLATOR OUTPUT

Input/Output Chart for IC6001

<table>
<tr><th>Pin Number</th><th>Input/Output</th><th>Port Name</th><th>Function</th></tr>
<tr><td>1</td><td>I</td><td>DEW SNS</td><td>This port is more than 1.36V during detecting the dew formation.</td></tr>
<tr><td>2</td><td>I</td><td>NORM/SERV/T2/
TEST</td><td>NORMAL/SERVICE/TEST2/TEST modes selection.
<table>
<tr><th>MODE</th><th>INPUT VOLTAGE</th></tr>
<tr><td>NORMAL</td><td>More than 4.0V</td></tr>
<tr><td>SERVICE</td><td>2.5V ~ 4.0V</td></tr>
<tr><td>TEST2</td><td>1.0V ~ 2.5V</td></tr>
<tr><td>TEST</td><td>Less than 1.0V</td></tr>
</table></td></tr>
<tr><td>3</td><td>I</td><td>T-PHOTO</td><td>This port receives the signal (less than 2.4V) when take-up photo sensor detects the tape beginning.</td></tr>
<tr><td>4</td><td>I</td><td>S-PHOTO</td><td>This port receives the signal (less than 2.4V) when supply photo sensor detects the tape end.</td></tr>
<tr><td>5</td><td>I</td><td>T. S. CURVE</td><td>AFC S-CURVE</td></tr>
<tr><td>6</td><td>I</td><td>TRACKING ENVE.</td><td>Playback envelope input for tracking adjustment.</td></tr>
<tr><td>7</td><td>0</td><td>V. O. MUTE(H)</td><td>This port supplies High signal when the picture is muted during a cassette in and power off mode.</td></tr>
<tr><td>8</td><td>0</td><td>VIDEO EE(L)</td><td>EE/VV mode selection.
EE mode : Low
VV mode : High</td></tr>
<tr><td>9</td><td>0</td><td>CURRENT LIMIT</td><td>Capstan motor current limitter output.
Normal drive : High
Middle brake : Middle (High impedance)
Current off : Low</td></tr>
<tr><td>10</td><td>0</td><td>CAP R/F</td><td>Capstan rotation direction control.
Reverse : High
Forward : Low</td></tr>
<tr><td>11</td><td>0</td><td>ART V/H/N</td><td>This port supplies artificial vertical sync signal to stabilize the picture in special playback mode.</td></tr>
<tr><td>12</td><td>I</td><td>REMOCON IN(L)</td><td>Remote controller data input (Active low).</td></tr>
<tr><td>13</td><td>0</td><td>ROTARY SW</td><td>Rotary switching signal output.</td></tr>
<tr><td>14</td><td>0</td><td>H. A. SW</td><td>Head Amp switching signal output.
LP/EP Mode : High
SP Mode : Low</td></tr>
<tr><td>15</td><td>0</td><td>ENVE. SELECT</td><td>This port receives the playback envelope signal level to select the video head in special playback mode.</td></tr>
<tr><td>16</td><td>0</td><td>VIDEO H. SW</td><td>Video head switching signal output.
L'/R Head : High
R'/L Head : Low</td></tr>
</table>

Fig. MP1

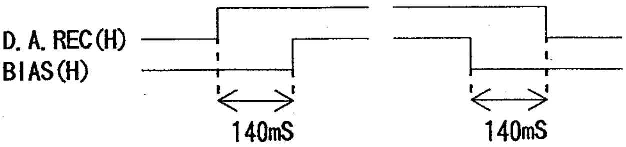
<table>
<tr><th>Pin Number</th><th>Input/Output</th><th>Port Name</th><th>Function</th></tr>
<tr><td>17</td><td>0</td><td>D. A. REC(H)</td><td rowspan="2">Normal audio recording control
 </td></tr>
<tr><td>24</td><td>0</td><td>BIAS(H)</td></tr>
<tr><td>18</td><td>0</td><td>D. REC(H)</td><td>Video signal recording on/off control.</td></tr>
<tr><td>19</td><td>0</td><td>CUR. EMPHASYS
(LM. LIM.)</td><td>This port supplies high signal during a certain time (refer to the following chart) from starting the recording to control the HIFI audio recording current.
<table>
<tr><th>TAPE SPEED</th><th>OUTPUT</th><th>TAPE SPEED</th><th>OUTPUT</th></tr>
<tr><td>NTSC 2H</td><td>6 sec</td><td>PAL 3H</td><td>9 sec</td></tr>
<tr><td>NTSC 4H</td><td>12 sec</td><td>PAL 6H</td><td>18 sec</td></tr>
<tr><td>NTSC 6H</td><td>18 sec</td><td>——</td><td>——</td></tr>
</table></td></tr>
<tr><td>20</td><td>0</td><td>REC(H)</td><td>DC voltage control for recording mode.</td></tr>
<tr><td>21</td><td>0</td><td>INSERT(L)</td><td>Insert mode control signal.</td></tr>
<tr><td>22</td><td>0</td><td>FULL ERASE(H)</td><td>Full erase on/off control.</td></tr>
<tr><td>23</td><td>0</td><td>EE/VV/TRICK(L)</td><td>Special playback mode control.
EE mode : High
VV mode : Middle
Trick mode : Low</td></tr>
<tr><td>25</td><td>0</td><td>CAP. VM. CHG.
(H)</td><td>Capstan motor voltage selection in high speed Rew/FF mode
This port supplies High signal when the capstan motor drives at 1500rpm during FF/REW modes.</td></tr>
<tr><td>26</td><td>0</td><td>FF/REW &
P. OFF(L)</td><td>This port is low during FF/REW modes and Power off.</td></tr>
<tr><td>27</td><td>0</td><td>LOW SPEED(L)</td><td>This port is low while the motor drives in low speed in CUE/REV/PLAY/REC and FF/REW modes.</td></tr>
<tr><td>28</td><td>0</td><td>NC</td><td>Not used.</td></tr>
<tr><td>29</td><td>I</td><td>S. TAB(L)</td><td>This port is low while the cassette tape with safety tab is inserted.</td></tr>
<tr><td>30</td><td>0</td><td>T. SNS. LED(L)</td><td>Sensor LED drive signal output.
When this port supplies the low signal, the sensor LED is lit.</td></tr>
<tr><td>31</td><td>0</td><td>NC</td><td>Not used.</td></tr>
<tr><td>32</td><td>0</td><td>NC</td><td>Not used.</td></tr>
<tr><td>33</td><td>0</td><td>CLK SLCT</td><td>Clock source selection.</td></tr>
</table>

Fig. MP2

Pin Number	Input/Output	Port Name	Function
34	0	NC	Not used.
35	I	5V(D)	Digital 5V.
36	I	16MHz IN	Oscillator input.
37	0	16MHz OUT	Oscillator output.
38	I	GND(OSC)	Oscillator GND.
39	I	32MHz IN	Oscillator input.
40	0	32MHz OUT	Oscillator output.
41	I	RESET(L)	This port is low while IC6001 is reset.
42	0	SP(L)	This port is low during SP mode.
43	0	TV(H)/VTR(L)	TV/VTR switching output.
44	I	NC	Not used
45	I	NC	Not used
46	0	NC	Not used
47	0	NC	Not used
48	0	LINE(H)/ TUNER(L)	LINE/TUNER switching output.
49	0	P. FAIL OUT(L)	When P. FAIL IN(73) is supplied high signal, this port is high after supplying low signal during the certain time (90msec).
50	0	OSD CS(L)	Character generator IC (OSD) chip select. (AM model : high setting)
51	0	MEM. CS(L)	EEP-ROM chip select.
52	0	PLL CS(H)	EEP-ROM, OSD IC and PLL IC chip select.
53	0	TU. V. MUTE(H)	Tuner output muting control.
54	0	TUNER SERCH(H)	This port is high while the tuner is in search mode. (tuning)
55	0	SYSTEM 2	Refer to Fig.MP6. NTSC M(H)
56	0	SYSTEM 4	Refer to Fig.MP6. PAL-I(H), B/G/D/K(L)
57	0	SYSTEM 1	Refer to Fig.MP6. MESECAM(H), PAL(L), AUTO(High-Z)

Fig.MP3

Pin Number	Input/Output	Port Name	Function
58	0	SYSTEM 5	Refer to Fig. MP6. NTSC(L) NTSC : Low PAL/SECAM : High
59	0	EE EDIT(H)	This port is High during EE mode, NTSC and EP mode.
60	0	AI1(H)	AI PB control signal output (59)AI ON is high : When envelope level is more than 1.5V, this port is low. (59)AI ON is low : When envelope level is less than 1.3V, this port is high.
61	0	A. DUB(H)	This port is high during audio dubbing mode.
62	0	AUDIO MUTE(H)	This port is high during special playback (CUE, REV, SLOW, STILL) mode.
63	0	FLD. TALK	Timer data output.
64	I	FLD. LSN	Timer data input.
65	0	FLD. CLK	Timer clock output.
66	0	IC TALK	EEP-ROM, OSD IC and PLL IC control data output.
67	I	IC LSN	EEP-ROM, OSD IC and PLL IC control data input.
68	0	IC CLK	EEP-ROM, OSD IC and PLL IC control clock output.
69	0	POWER OFF(H)	Power on/off control.
70	0	128Hz	IC6001 main clock adjustment output.
71	0	LOADING(H)	This port is high while the mechanism is loaded.
72	0	UNLOADING(H)	This port is high while the mechanism is unloaded.
73	I	P. FAIL IN(L)	Power failure detection input. This port is low during power failure.
74	I	5V(DA)	D/A 5V
77	I	T. REEL PULSE	Take-up reel pulse input.
78	I	S. REEL PULSE	Supply reel pulse input.
79	I	358(H)	NTSC 3.58 selection input.
80	I	ABS TV(L)	This port is low during compulsory TV mode.
81	I	NC	Not used.
82	I	VSY(HSY)	Composite video sync input.

Fig. MP4

<table>
<tr><th>Pin Number</th><th>Input/Output</th><th>Port Name</th><th>Function</th></tr>
<tr><td>86</td><td>I</td><td>GND(A)</td><td>Analog GND.</td></tr>
<tr><td>87</td><td>0</td><td>OREF</td><td>1/2 VDD reference OP-AMP output.</td></tr>
<tr><td>88</td><td>I</td><td>IREF</td><td>1/2 VDD reference OP-AMP input.</td></tr>
<tr><td>91</td><td>I</td><td>GND</td><td>GND.</td></tr>
<tr><td>92</td><td>I</td><td>SHORT DOWN(L)</td><td>5V in video recording mode mis-function detection.</td></tr>
<tr><td>96</td><td>I</td><td>5V(A)</td><td>Analog VDD (5V)</td></tr>
<tr><td>97</td><td>I</td><td>POSITION SW3</td><td rowspan="3">
<table>
<tr><th>P SW 3</th><th>P SW 2</th><th>P SW 1</th><th>POSITION (MODE) NAME</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>EJECT</td></tr>
<tr><td>0</td><td>0</td><td>I</td><td>CASSETTE DOWN</td></tr>
<tr><td>0</td><td>I</td><td>0</td><td>REV, REV SLOW</td></tr>
<tr><td>0</td><td>I</td><td>I</td><td>MID (LOADING, UNLOADING)</td></tr>
<tr><td>I</td><td>0</td><td>0</td><td>PLAY, REC, STILL, PAUSE, CUE, FWD SLOW, STOP3* 1</td></tr>
<tr><td>I</td><td>0</td><td>I</td><td>STOP</td></tr>
<tr><td>I</td><td>I</td><td>0</td><td>FF, REW</td></tr>
<tr><td>I</td><td>I</td><td>I</td><td>INTERMEDIATE</td></tr>
</table>
(* 1) The Pinch Roller is on the capstan motor shaft.</td></tr>
<tr><td>98</td><td>I</td><td>POSITION SW2</td></tr>
<tr><td>99</td><td>I</td><td>POSITION SW1</td></tr>
<tr><td>100</td><td>0</td><td>FL. DRV.→CS(L)</td><td>Display tube (FIP) drive chip select.</td></tr>
</table>

Fig. MP5

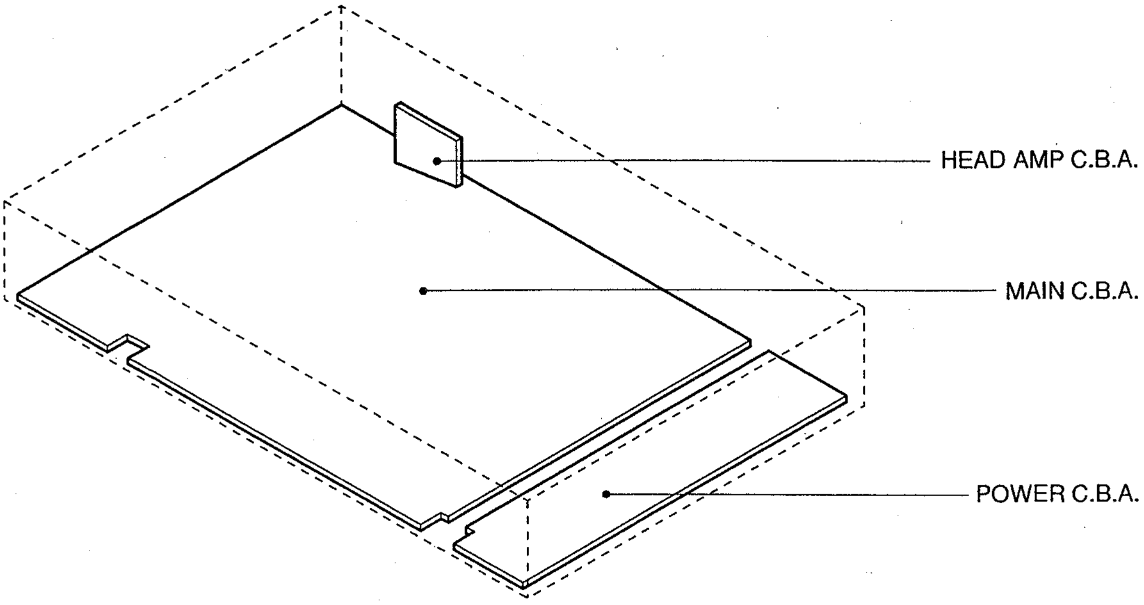
	MODE1	MODE2	MODE3	MODE4
PIN 57 (SYSTEM1)	H:MESECAM L:PAL Z:AUTO	H:MESECAM L:PAL	H:PAL L:NTSC Z:AUTO	H:MESECAM L:PAL Z:AUTO
PIN 55 (SYSTEM2)	H:NTSC-M L:EXCEPT NTSC	H:SECAM L:PAL Z:AUTO	—	H:NTSC-M L:EXCEPT NTSC
PIN 56 (SYSTEM4)	H:PAL-I L:B/G/D/K	H:SECAM L:PAL	—	H:PAL-I L:B/G/D/K
PIN 58 (SYSTEM5)	H:PAL L:NTSC	H:PAL L:NTSC	H:50Hz L:60Hz	H:PAL L:NTSC

Z:HIGH IMPEADNCE

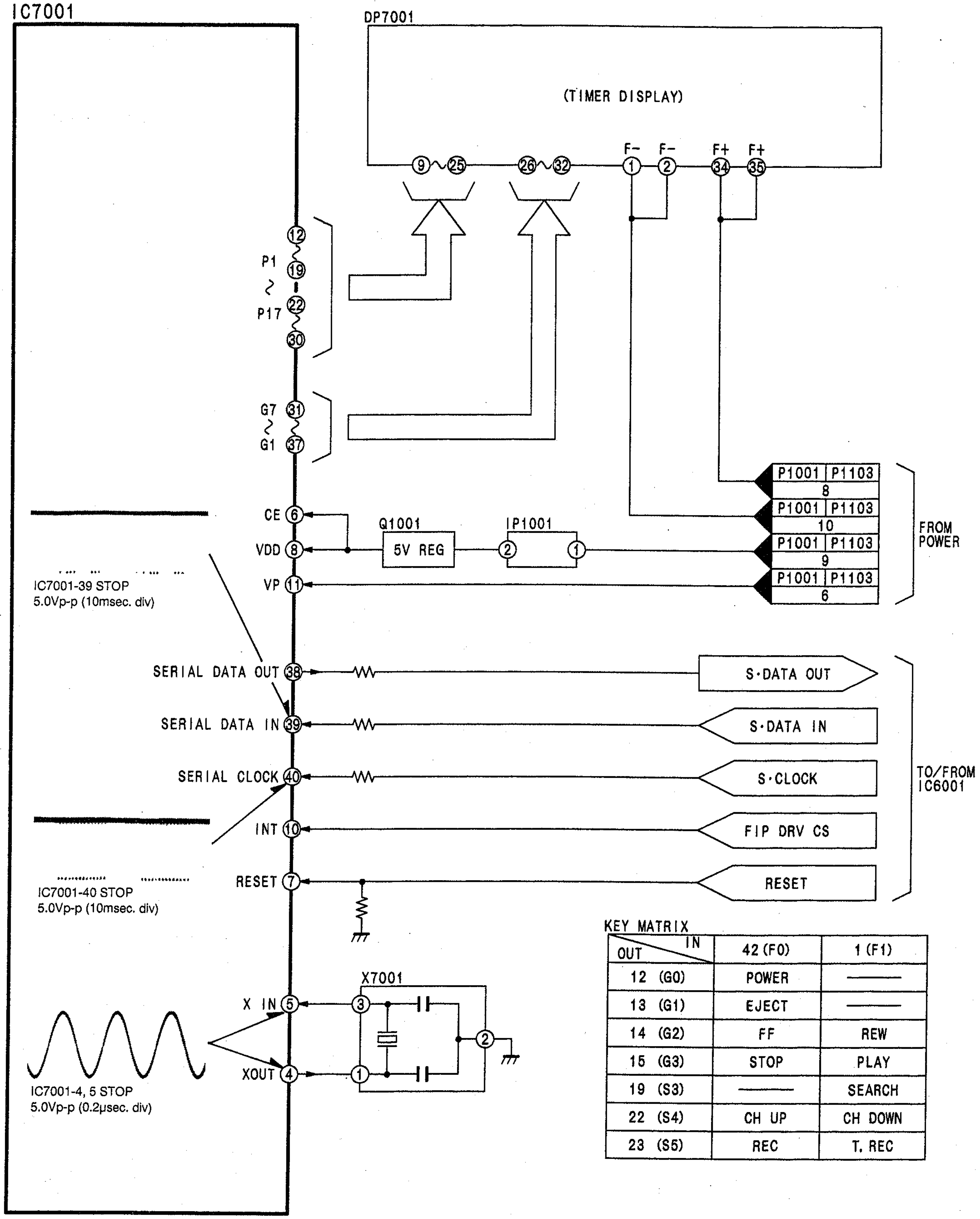
NOTE : This model is fixed in mode 1.

Fig. MP6

CIRCUIT BOARD LAYOUT


HEAD AMP C.B.A.
MAIN C.B.A.
POWER C.B.A.

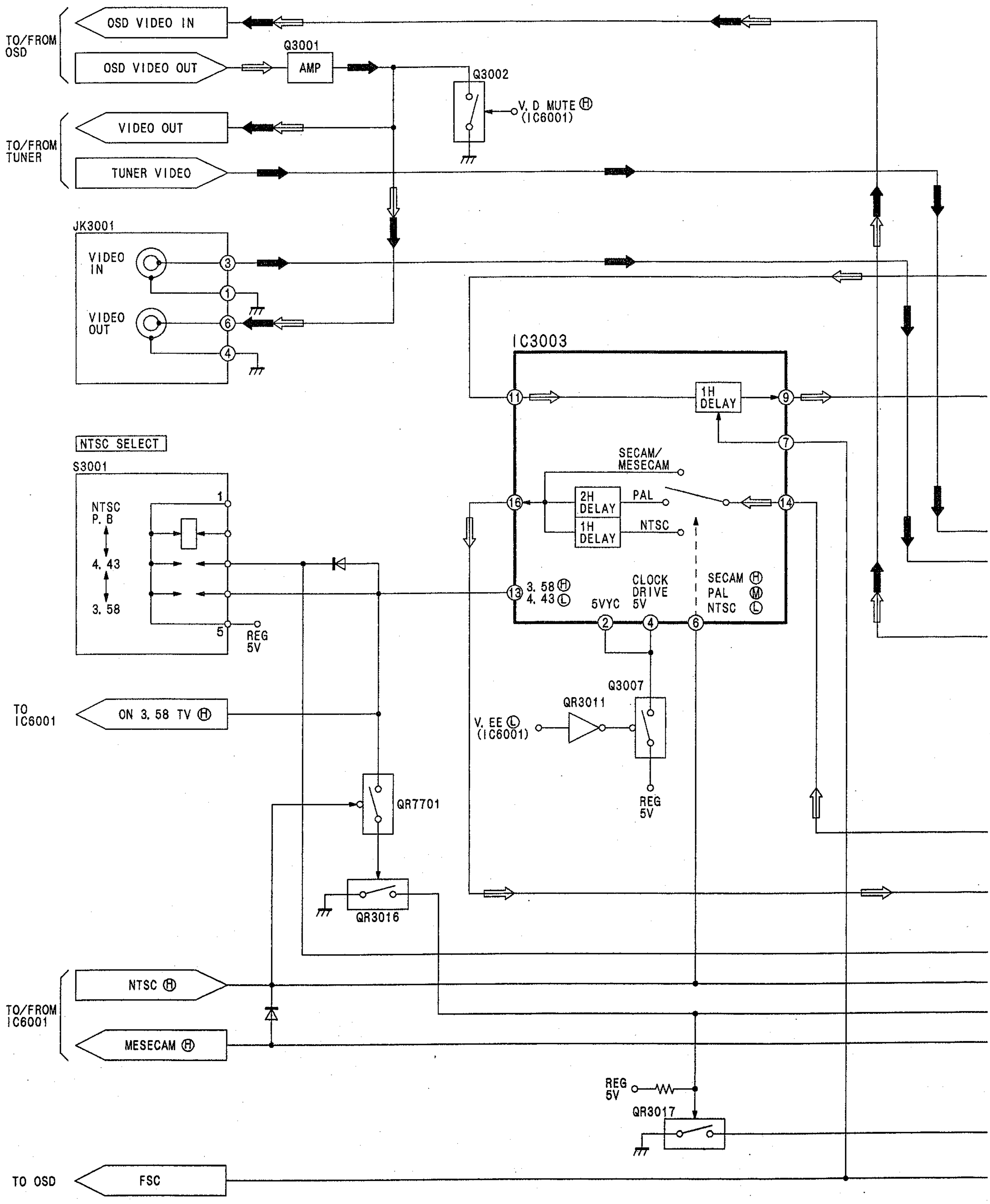
3-2. TIMER BLOCK DIAGRAM


IC7001
DP7001
(TIMER DISPLAY)
9 ~ 25
26 ~ 32
F− F−
F+ F+
1 2 34 35
P1 12 ~ 19
P17 22 ~ 30
G7 31
G1 37
CE 6
VDD 8
VP 11
Q1001
5V REG
IP1001
P1001 P1103 8
P1001 P1103 10
P1001 P1103 9
P1001 P1103 6
FROM POWER
IC7001-39 STOP
5.0Vp-p (10msec. div)
SERIAL DATA OUT 38
SERIAL DATA IN 39
SERIAL CLOCK 40
INT 10
RESET 7
S·DATA OUT
S·DATA IN
S·CLOCK
FIP DRV CS
RESET
TO/FROM IC6001
IC7001-40 STOP
5.0Vp-p (10msec. div)
X7001
X IN 5
XOUT 4
IC7001-4, 5 STOP
5.0Vp-p (0.2μsec. div)

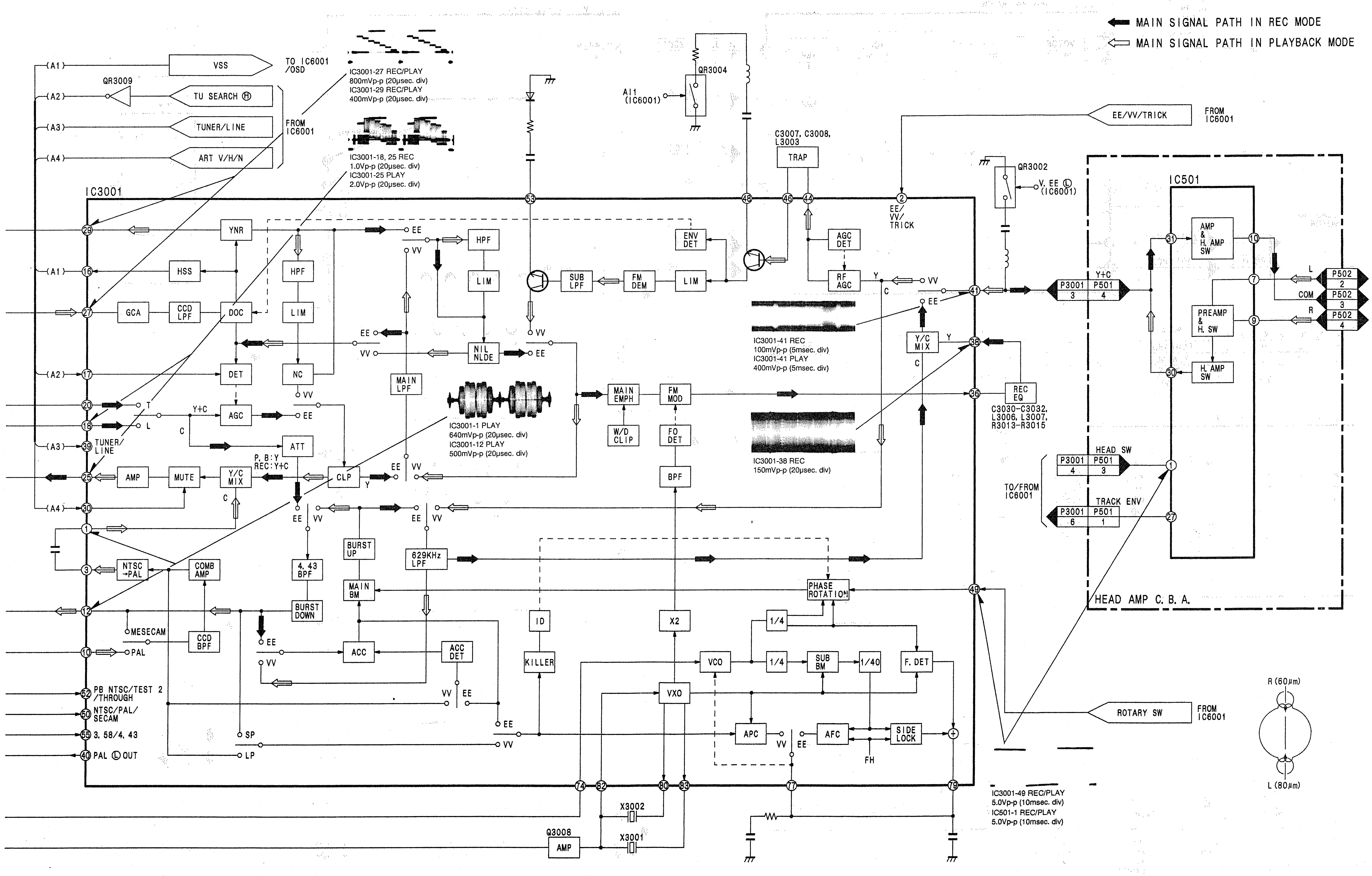
KEY MATRIX

OUT \ IN	42 (F0)	1 (F1)
12 (G0)	POWER	———
13 (G1)	EJECT	———
14 (G2)	FF	REW
15 (G3)	STOP	PLAY
19 (S3)	———	SEARCH
22 (S4)	CH UP	CH DOWN
23 (S5)	REC	T. REC

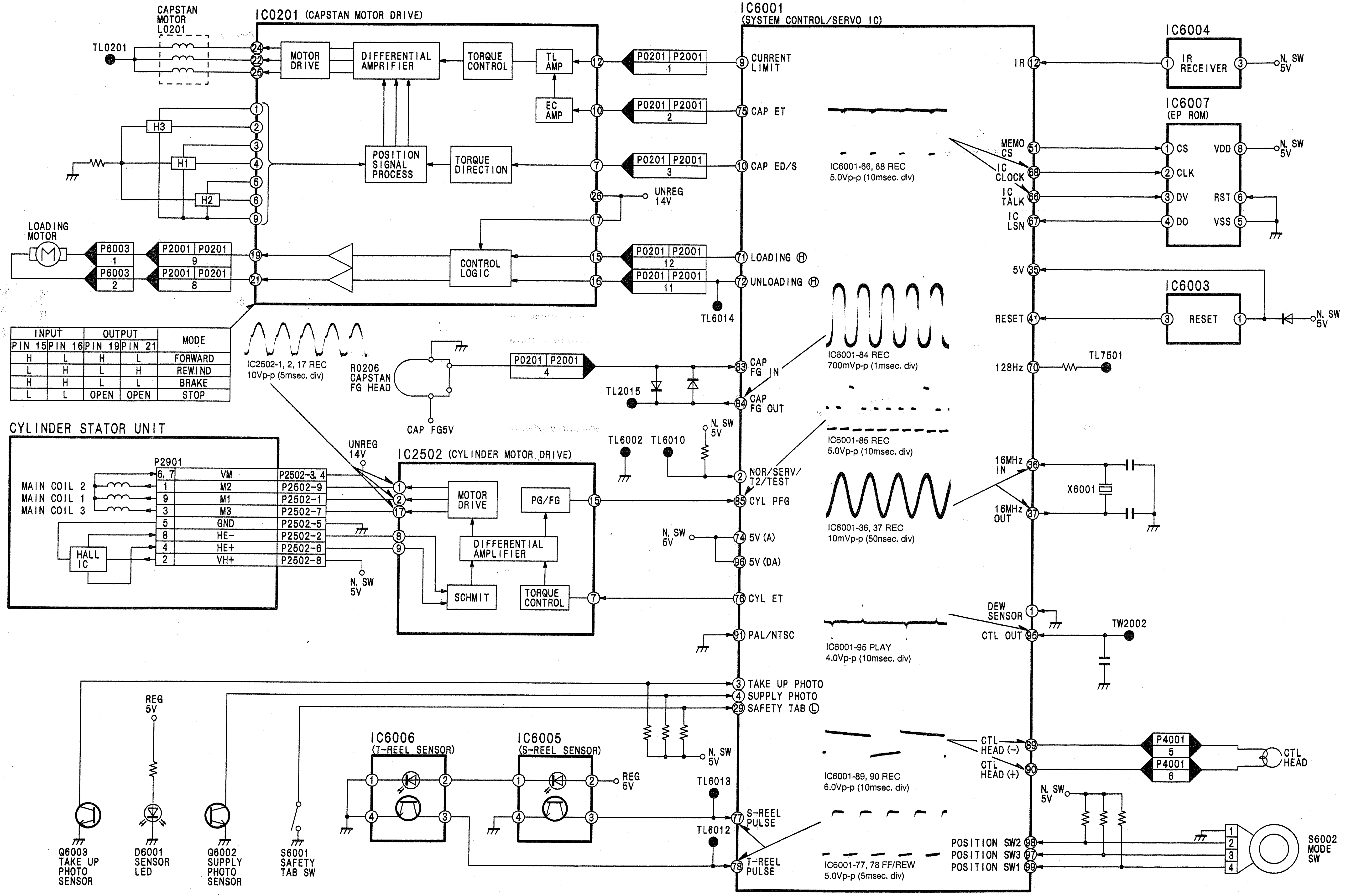
3-3. LUMINANCE & CHROMINANCE BLOCK DIAGRAM



TO/FROM OSD
OSD VIDEO IN
OSD VIDEO OUT
Q3001
AMP
Q3002
V. D MUTE Ⓗ (IC6001)
TO/FROM TUNER
VIDEO OUT
TUNER VIDEO
JK3001
VIDEO IN
VIDEO OUT
③
①
⑥
④
IC3003
⑪
1H DELAY
⑨
⑦
SECAM/ MESECAM
2H DELAY
PAL
1H DELAY
NTSC
⑯
⑭
⑬
3. 58 Ⓗ 4. 43 Ⓛ
5VYC
CLOCK DRIVE 5V
SECAM Ⓗ PAL Ⓜ NTSC Ⓛ
②
④
⑥
NTSC SELECT
S3001
NTSC P. B
4. 43
3. 58
1
5
REG 5V
Q3007
QR3011
V. EE Ⓛ (IC6001)
REG 5V
TO IC6001
ON 3. 58 TV Ⓗ
QR7701
QR3016
TO/FROM IC6001
NTSC Ⓗ
MESECAM Ⓗ
REG 5V
QR3017
TO OSD
FSC


MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE
VSS
TO IC6001 /OSD
QR3009
TU SEARCH Ⓗ
TUNER/LINE
ART V/H/N
FROM IC6001
IC3001-27 REC/PLAY 800mVp-p (20μsec. div)
IC3001-29 REC/PLAY 400mVp-p (20μsec. div)
IC3001-18, 25 REC 1.0Vp-p (20μsec. div)
IC3001-25 PLAY 2.0Vp-p (20μsec. div)
IC3001
YNR
HSS
GCA
CCD LPF
DOC
DET
AGC
ATT
HPF
LIM
NC
CLP
Y/C MIX
MUTE
AMP
TUNER/ LINE
P. B: Y REC: Y+C
NIL NLDE
MAIN LPF
IC3001-1 PLAY 640mVp-p (20μsec. div)
IC3001-12 PLAY 500mVp-p (20μsec. div)
NTSC →PAL
COMB AMP
CCD BPF
MESECAM
PAL
4. 43 BPF
BURST DOWN
BURST UP
MAIN BM
629KHz LPF
ACC
ACC DET
PB NTSC/TEST 2 /THROUGH
NTSC/PAL/ SECAM
3. 58/4. 43
PAL Ⓛ OUT
SP
LP
EE
VV
Q3008
X3002
X3001
AI1 (IC6001)
QR3004
C3007, C3008, L3003
TRAP
SUB LPF
FM DEM
ENV DET
AGC DET
RF AGC
MAIN EMPH
W/D CLIP
FM MOD
FO DET
BPF
ID
KILLER
X2
VCO
VXO
1/4
SUB BM
1/40
F. DET
APC
AFC
SIDE LOCK
FH
PHASE ROTATION
IC3001-41 REC 100mVp-p (5msec. div)
IC3001-41 PLAY 400mVp-p (5msec. div)
IC3001-38 REC 150mVp-p (20μsec. div)
REC EQ
C3030-C3032, L3006, L3007, R3013-R3015
EE/ VV/ TRICK
EE/VV/TRICK
FROM IC6001
QR3002
V. EE Ⓛ (IC6001)
IC501
AMP & H. AMP SW
PREAMP & H. SW
H. AMP SW
Y+C
P3001 3
P501 4
P502 2
P502 3
P502 4
L
COM
R
HEAD SW
P3001 4
P501 3
TO/FROM IC6001
TRACK ENV
P3001 6
P501 1
HEAD AMP C. B. A.
ROTARY SW
FROM IC6001
IC3001-49 REC/PLAY 5.0Vp-p (10msec. div)
IC501-1 REC/PLAY 5.0Vp-p (10msec. div)
R (60μm)
L (80μm)

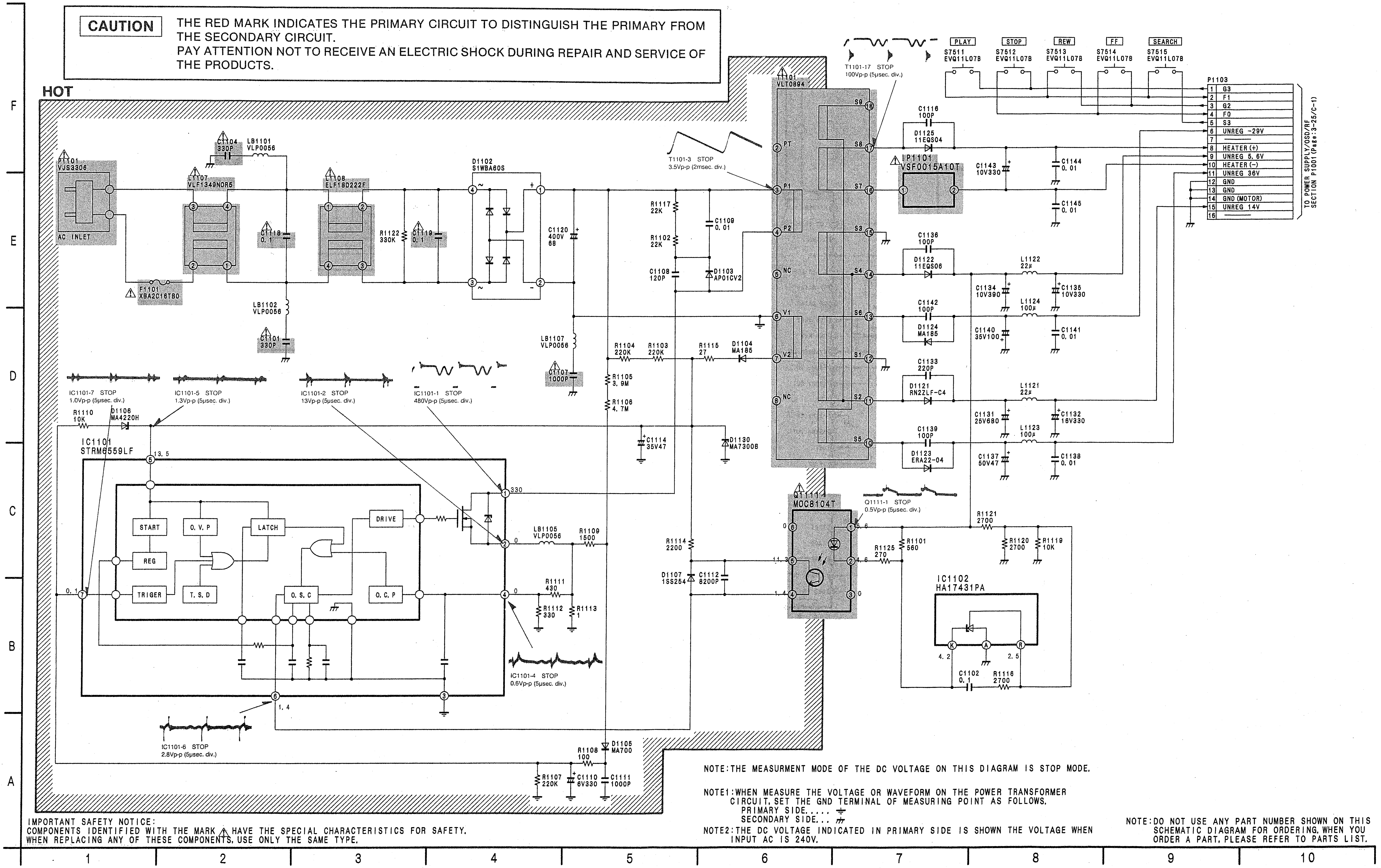
3-4. SYSTEM CONTROL & SERVO BLOCK DIAGRAM



CAPSTAN MOTOR L0201
TL0201
IC0201 (CAPSTAN MOTOR DRIVE)
MOTOR DRIVE
DIFFERENTIAL AMPRIFIER
TORQUE CONTROL
TL AMP
EC AMP
POSITION SIGNAL PROCESS
TORQUE DIRECTION
CONTROL LOGIC
H1
H2
H3
UNREG 14V
LOADING MOTOR
P6003 1
P6003 2
P2001 P0201 9
P2001 P0201 8
P0201 P2001 1
P0201 P2001 2
P0201 P2001 3
P0201 P2001 12
P0201 P2001 11
P0201 P2001 4
TL6014
IC2502-1, 2, 17 REC
10Vp-p (5msec. div)
R0206 CAPSTAN FG HEAD
CAP FG5V
TL2015
TL6002
TL6010
N. SW 5V
CYLINDER STATOR UNIT
P2901
MAIN COIL 2
MAIN COIL 1
MAIN COIL 3
HALL IC
6, 7 VM P2502-3, 4
1 M2 P2502-9
9 M1 P2502-1
3 M3 P2502-7
5 GND P2502-5
8 HE− P2502-2
4 HE+ P2502-6
2 VH+ P2502-8
UNREG 14V
IC2502 (CYLINDER MOTOR DRIVE)
MOTOR DRIVE
PG/FG
DIFFERENTIAL AMPLIFIER
SCHMIT
TORQUE CONTROL
IC6001 (SYSTEM CONTROL/SERVO IC)
⑨ CURRENT LIMIT
(75) CAP ET
⑩ CAP ED/S
(71) LOADING Ⓗ
(72) UNLOADING Ⓗ
(83) CAP FG IN
(84) CAP FG OUT
② NOR/SERV/T2/TEST
(95) CYL PFG
(74) 5V (A)
(96) 5V (DA)
(76) CYL ET
(91) PAL/NTSC
③ TAKE UP PHOTO
④ SUPPLY PHOTO
(29) SAFETY TAB Ⓛ
(77) S-REEL PULSE
(78) T-REEL PULSE
TL6013
TL6012
IC6001-66, 68 REC
5.0Vp-p (10msec. div)
IC6001-84 REC
700mVp-p (1msec. div)
IC6001-85 REC
5.0Vp-p (10msec. div)
IC6001-36, 37 REC
10mVp-p (50nsec. div)
IC6001-95 PLAY
4.0Vp-p (10msec. div)
IC6001-89, 90 REC
6.0Vp-p (10msec. div)
IC6001-77, 78 FF/REW
5.0Vp-p (5msec. div)
IR (12)
IC6004
IR RECEIVER
N. SW 5V
IC6007 (EP ROM)
MEMO CS (51)
IC CLOCK (68)
IC TALK (66)
IC LSN (67)
① CS
② CLK
③ DV
④ DO
VDD ⑧
RST ⑥
VSS ⑤
5V (35)
RESET (41)
IC6003
RESET
128Hz (70)
TL7501
16MHz IN (36)
16MHz OUT (37)
X6001
DEW SENSOR ①
CTL OUT (95)
TW2002
CTL HEAD (−) (89)
CTL HEAD (+) (90)
P4001 5
P4001 6
CTL HEAD
POSITION SW2 (98)
POSITION SW3 (97)
POSITION SW1 (99)
S6002 MODE SW
IC6006 (T-REEL SENSOR)
IC6005 (S-REEL SENSOR)
REG 5V
Q6003 TAKE UP PHOTO SENSOR
D6001 SENSOR LED
Q6002 SUPPLY PHOTO SENSOR
S6001 SAFETY TAB SW

INPUT		OUTPUT		MODE
PIN 15	PIN 16	PIN 19	PIN 21	
H	L	H	L	FORWARD
L	H	L	H	REWIND
H	H	L	L	BRAKE
L	L	OPEN	OPEN	STOP

3-5. POWER SCHEMATIC DIAGRAM



CAUTION THE RED MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT. PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

HOT
P1101
VJS3306
AC INLET
F1101
XBA2C16TB0
L1107
VLF1349NOR5
C1104
330P
LB1101
VLP0056
C1118
0.1
LB1102
VLP0056
C1101
330P
L1108
ELF18D222F
R1122
330K
C1119
0.1
D1102
S1WBA60S
C1120
400V
68
LB1107
VLP0056
C1107
1000P
R1117
22K
R1102
22K
C1108
120P
C1109
0.01
D1103
AP01CV2
R1104
220K
R1103
220K
R1115
27
D1104
MA185
R1105
3.9M
R1106
4.7M
C1114
35V47
D1130
MA7300B
T1101
VLT0894
T1101-3 STOP
3.5Vp-p (2msec. div.)
T1101-17 STOP
100Vp-p (5μsec. div.)
PT
P1
P2
NC
V1
V2
S9
S8
S7
S3
S4
S6
S1
S2
S5
PLAY
STOP
REW
FF
SEARCH
S7511
EVQ11L07B
S7512
EVQ11L07B
S7513
EVQ11L07B
S7514
EVQ11L07B
S7515
EVQ11L07B
P1103
1 G3
2 F1
3 G2
4 F0
5 S3
6 UNREG -29V
7 ———
8 HEATER (+)
9 UNREG 5.6V
10 HEATER (−)
11 UNREG 36V
12 GND
13 GND
14 GND (MOTOR)
15 UNREG 14V
16 ———
TO POWER SUPPLY/OSD/RF SECTION P1001 (Page:3-25/C-1)
C1116
100P
D1125
11EQS04
IP1101
VSF0015A10T
C1143
10V330
C1144
0.01
C1145
0.01
C1136
100P
D1122
11EQS06
L1122
22μ
C1134
10V390
C1135
10V330
L1124
100μ
C1142
100P
D1124
MA185
C1140
35V100
C1141
0.01
C1133
220P
D1121
RN2ZLF-C4
L1121
22μ
C1131
25V680
C1132
16V330
L1123
100μ
C1139
100P
D1123
ERA22-04
C1137
50V47
C1138
0.01
IC1101-7 STOP
1.0Vp-p (5μsec. div.)
IC1101-5 STOP
1.3Vp-p (5μsec. div.)
IC1101-2 STOP
13Vp-p (5μsec. div.)
IC1101-1 STOP
480Vp-p (5μsec. div.)
R1110
10K
D1106
MA4220H
IC1101
STRM6559LF
13.5
START
O.V.P
LATCH
DRIVE
REG
TRIGER
T.S.D
O.S.C
O.C.P
330
0
0.1
1.4
LB1105
VLP0056
R1109
1500
R1111
430
R1112
330
R1113
1
IC1101-4 STOP
0.6Vp-p (5μsec. div.)
IC1101-6 STOP
2.8Vp-p (5μsec. div.)
R1114
2200
D1107
1SS254
C1112
8200P
Q1111
MOC8104T
Q1111-1 STOP
0.5Vp-p (5μsec. div.)
R1121
2700
R1125
270
R1101
560
R1120
2700
R1119
10K
IC1102
HA17431PA
K
A
R
4.2
2.5
C1102
0.1
R1116
2700
D1105
MA700
R1108
100
R1107
220K
C1110
6V330
C1111
1000P
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10

NOTE:THE MEASURMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE1:WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT, SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE..... ⏚
SECONDARY SIDE... ⏚

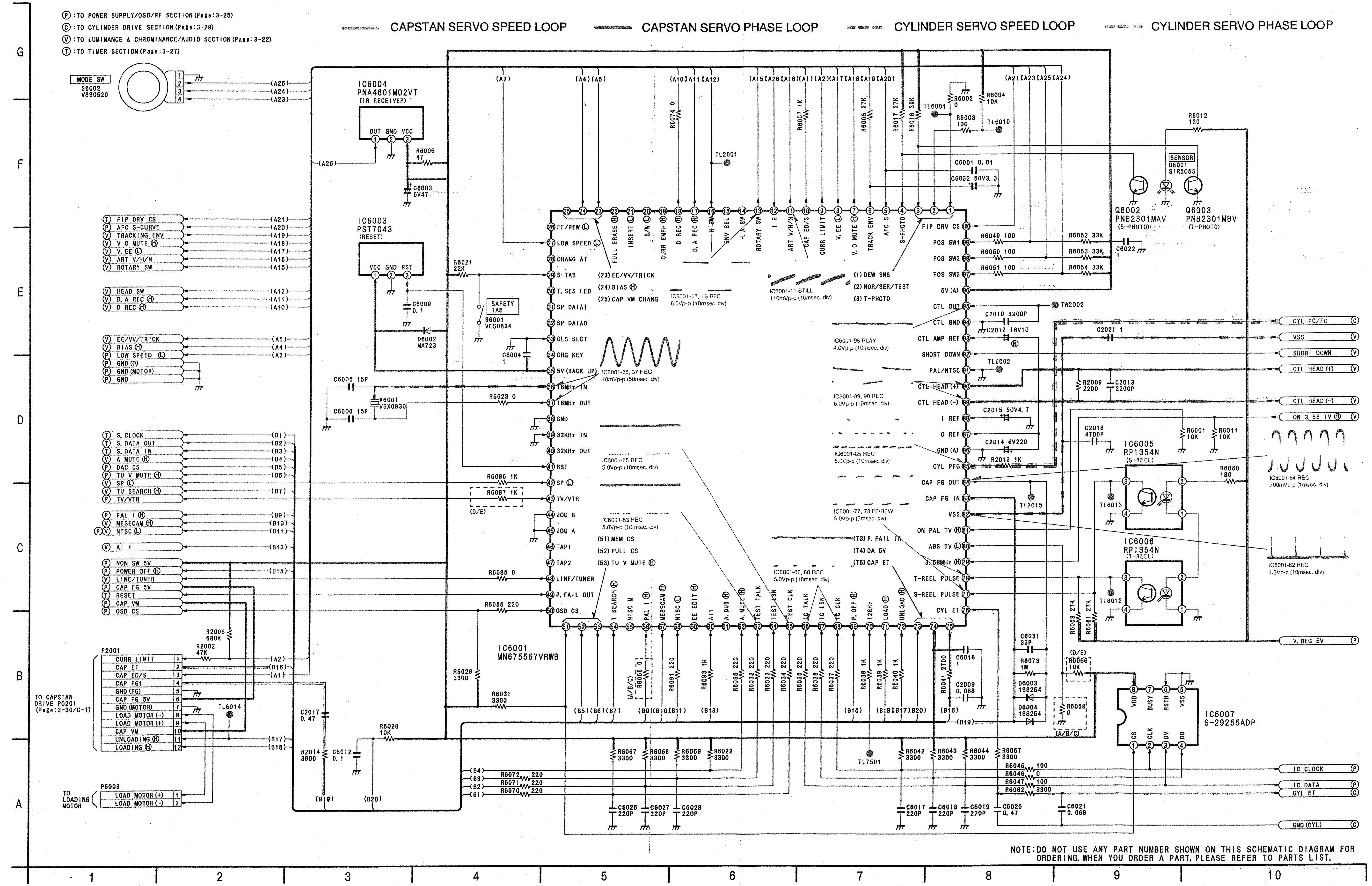
NOTE2:THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IS 240V.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING, WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

3-6. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM

Ⓟ :TO POWER SUPPLY/OSD/RF SECTION(Page:3-25)
Ⓒ :TO CYLINDER DRIVE SECTION(Page:3-29)
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION(Page:3-22)
Ⓣ :TO TIMER SECTION(Page:3-27)



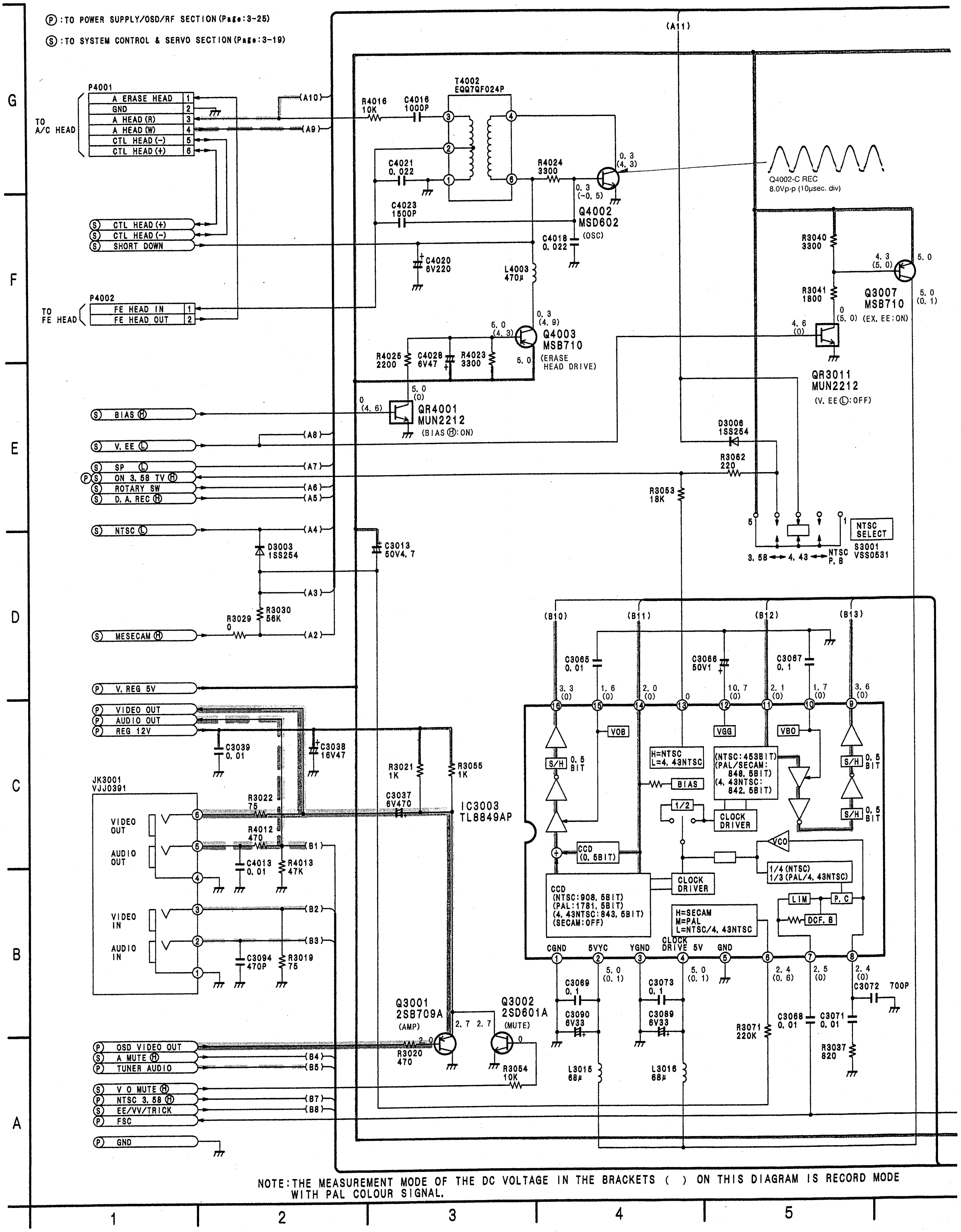
CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
MODE SW
S6002
VSS0520
IC6004
PNA4601M02VT
(IR RECEIVER)
OUT GND VCC
R6006 47
C6003 6V47
IC6003
PST7043
(RESET)
VCC GND RST
C6009 0.1
D6002 MA723
R6021 22K
SAFETY TAB
S6001 VES0834
C6004 1
C6005 15P
C6006 15P
X6001 VSX0830
R6023 0
R6086 1K
R6087 1K
(D/E)
R6085 0
R6055 220
R6029 3300
R6031 3300
R6028 10K
R2003 680K
R2002 47K
R2014 3900
C6012 0.1
C2017 0.47
TL6014
TL2001
TL6001
TL6010
TL6002
TL2015
TL6013
TL6012
TL7501
TW2002
R6074 0
R6007 1K
R6005 27K
R6017 27K
R6016 39K
R6002 0
R6004 10K
R6003 100
R6012 120
C6001 0.01
C6032 50V3.3
SENSOR
D6001 SIR505S
Q6002 PNB2301MAV (S-PHOTO)
Q6003 PNB2301MBV (T-PHOTO)
R6049 100
R6050 100
R6051 100
R6052 33K
R6053 33K
R6054 33K
C6022 1
C2010 3900P
C2012 16V10
C2021 1
R2009 2200
C2013 2200P
C2015 50V4.7
C2018 4700P
C2014 6V220
R2013 1K
R6001 10K
R6011 10K
R6060 180
IC6005 RPI354N (S-REEL)
IC6006 RPI354N (T-REEL)
R6059 27K
R6061 27K
C6031 33P
R6073 1M
D6003 1SS254
D6004 1SS254
R6056 10K
R6058 0
(A/B/C)
IC6007 S-29255ADP
VDD BUSY RSTB VSS
CS CLK DI DO
C6016 1
C2009 0.068
R6041 2700
IC6001
MN675567VRWB
FF/REW Ⓛ
LOW SPEED Ⓛ
CHANG AT
S-TAB
T. SES LED
SP DATA1
SP DATA0
CLS SLCT
CHG KEY
5V (BACK UP)
16MHz IN
16MHz OUT
GND
32KHz IN
32KHz OUT
RST
SP Ⓛ
TV/VTR
JOG B
JOG A
TAP1
TAP2
LINE/TUNER
P. FAIL OUT
OSD CS
FULL ERASE Ⓗ
INSERT Ⓛ
B/W Ⓛ
CURR EMPH Ⓗ
D REC Ⓗ
D. A REC Ⓗ
H-SW
ENV SEL
H. A SW
ROTARY SW
I. R
ART V/H/N
CAP ED/S
CURR LIMIT
V. EE Ⓛ
V. O MUTE Ⓗ
TRACK ENV
AFC S
S-PHOTO
FIP DRV CS
POS SW1
POS SW2
POS SW3
5V (A)
CTL OUT
CTL GND
CTL AMP REF
SHORT DOWN
PAL/NTSC
CTL HEAD (+)
CTL HEAD (-)
I REF
O REF
GND (A)
CYL PFG
CAP FG OUT
CAP FG IN
VSS
ON PAL TV Ⓗ
ABS TV Ⓛ
3.58MHz Ⓗ
T-REEL PULSE
S-REEL PULSE
CYL ET
T SEARCH Ⓗ
NTSC M
PAL I Ⓗ
MESECAM Ⓗ
NTSC Ⓛ
EE EDIT Ⓗ
AI1
A. DUB Ⓗ
A. MUTE Ⓗ
TEST TALK
TEST LSN
TEST CLK
IC TALK
IC LSN
IC CLK
P. OFF Ⓗ
128Hz
LOAD Ⓗ
UNLOAD Ⓗ
(23) EE/VV/TRICK
(24) BIAS Ⓗ
(25) CAP VM CHANG
(1) DEW SNS
(2) NOR/SER/TEST
(3) T-PHOTO
(51) MEM CS
(52) PULL CS
(53) TU V MUTE Ⓗ
(73) P. FAIL IN
(74) DA 5V
(75) CAP ET
IC6001-13, 16 REC 6.0Vp-p (10msec. div)
IC6001-11 STILL 110mVp-p (10msec. div)
IC6001-36, 37 REC 10mVp-p (50nsec. div)
IC6001-65 REC 5.0Vp-p (10msec. div)
IC6001-63 REC 5.0Vp-p (10msec. div)
IC6001-95 PLAY 4.0Vp-p (10msec. div)
IC6001-89, 90 REC 6.0Vp-p (10msec. div)
IC6001-85 REC 5.0Vp-p (10msec. div)
IC6001-77, 78 FF/REW 5.0Vp-p (5msec. div)
IC6001-66, 68 REC 5.0Vp-p (10msec. div)
IC6001-84 REC 700mVp-p (1msec. div)
IC6001-82 REC 1.8Vp-p (10msec. div)
(A2)
(A4)(A5)
(A10)(A11)(A12)
(A15)(A26)(A16)(A1)(A2)(A17)(A18)(A19)(A20)
(A21)(A23)(A25)(A24)
(A26)
Ⓣ FIP DRV CS
Ⓟ AFC S-CURVE
Ⓥ TRACKING ENV
Ⓥ V O MUTE Ⓗ
Ⓥ V. EE Ⓛ
Ⓥ ART V/H/N
Ⓥ ROTARY SW
Ⓥ HEAD SW
Ⓥ D. A REC Ⓗ
Ⓥ D REC Ⓗ
Ⓥ EE/VV/TRICK
Ⓥ BIAS Ⓗ
Ⓟ LOW SPEED Ⓛ
Ⓟ GND (D)
Ⓟ GND (MOTOR)
Ⓟ GND
Ⓣ S. CLOCK
Ⓣ S. DATA OUT
Ⓣ S. DATA IN
Ⓥ A MUTE Ⓗ
Ⓟ DAC CS
Ⓟ TU V MUTE Ⓗ
Ⓥ SP Ⓛ
Ⓥ TU SEARCH Ⓗ
Ⓟ TV/VTR
Ⓟ PAL I Ⓗ
Ⓥ MESECAM Ⓗ
ⓅⓋ NTSC Ⓛ
Ⓥ AI 1
Ⓟ NON SW 5V
Ⓟ POWER OFF Ⓗ
Ⓥ LINE/TUNER
Ⓟ CAP FG 5V
Ⓣ RESET
Ⓟ CAP VM
Ⓟ OSD CS
P2001
CURR LIMIT
CAP ET
CAP ED/S
CAP FG1
GND (FG)
CAP FG 5V
GND (MOTOR)
LOAD MOTOR (-)
LOAD MOTOR (+)
CAP VM
UNLOADING Ⓗ
LOADING Ⓗ
TO CAPSTAN DRIVE P0201 (Page:3-30/C-1)
P6003
LOAD MOTOR (+)
LOAD MOTOR (-)
TO LOADING MOTOR
R6067 3300
R6068 3300
R6069 3300
R6022 3300
R6072 220
R6071 220
R6070 220
C6026 220P
C6027 220P
C6028 220P
R6091 220
R6093 1K
R6095 220
R6032 220
R6033 220
R6034 220
R6036 220
R6037 220
R6038 1K
R6039 1K
R6040 1K
R6042 3300
R6043 3300
R6044 3300
R6057 3300
R6045 100
R6046 0
R6047 100
R6062 3300
C6017 220P
C6018 220P
C6019 220P
C6020 0.47
C6021 0.068
CYL PG/FG Ⓒ
VSS Ⓥ
SHORT DOWN Ⓥ
CTL HEAD (+) Ⓥ
CTL HEAD (-) Ⓥ
ON 3.58 TV Ⓗ Ⓥ
V. REG 5V Ⓟ
IC CLOCK Ⓟ
IC DATA Ⓟ
CYL ET Ⓒ
GND (CYL) Ⓒ

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-7. LUMINANCE & CHROMINANCE/AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

Ⓟ :TO POWER SUPPLY/OSD/RF SECTION (Page:3-25)

Ⓢ :TO SYSTEM CONTROL & SERVO SECTION (Page:3-19)



G
F
E
D
C
B
A
1
2
3
4
5
P4001
TO A/C HEAD
A ERASE HEAD 1
GND 2
A HEAD (R) 3
A HEAD (W) 4
CTL HEAD (-) 5
CTL HEAD (+) 6
(A10)
(A9)
(A11)
R4016 10K
C4016 1000P
T4002 EQQ7QF024P
C4021 0.022
R4024 3300
C4023 1500P
Q4002 MSD602
(OSC)
C4018 0.022
C4020 6V220
L4003 470µ
Q4002-C REC 8.0Vp-p (10µsec. div)
Ⓢ CTL HEAD (+)
Ⓢ CTL HEAD (-)
Ⓢ SHORT DOWN
P4002
TO FE HEAD
FE HEAD IN 1
FE HEAD OUT 2
Q4003 MSB710
(ERASE HEAD DRIVE)
R4025 2200
C4028 6V47
R4023 3300
QR4001 MUN2212
(BIAS Ⓗ:ON)
R3040 3300
R3041 1800
Q3007 MSB710
(5.0) (EX. EE:ON)
QR3011 MUN2212
(V. EE Ⓛ:OFF)
Ⓢ BIAS Ⓗ
Ⓢ V. EE Ⓛ
Ⓢ SP Ⓛ
ⓅⓈ ON 3.58 TV Ⓗ
Ⓢ ROTARY SW
Ⓢ D. A. REC Ⓗ
Ⓢ NTSC Ⓛ
(A8)
(A7)
(A6)
(A5)
(A4)
(A3)
(A2)
D3006 1SS254
R3062 220
R3053 18K
NTSC SELECT
S3001 VSS0531
3.58 ◄► 4.43 ◄► NTSC P.B
D3003 1SS254
C3013 50V4.7
R3029 0
R3030 56K
Ⓢ MESECAM Ⓗ
(B10)
(B11)
(B12)
(B13)
C3065 0.01
C3066 50V1
C3067 0.1
Ⓟ V. REG 5V
Ⓟ VIDEO OUT
Ⓟ AUDIO OUT
Ⓟ REG 12V
C3039 0.01
C3038 16V47
R3021 1K
R3055 1K
C3037 6V470
IC3003 TL8849AP
JK3001 VJJ0391
VIDEO OUT
AUDIO OUT
VIDEO IN
AUDIO IN
R3022 75
R4012 470
C4013 0.01
R4013 47K
(B1)
(B2)
(B3)
C3094 470P
R3019 75
VOB
VGG
VBO
S/H 0.5 BIT
H=NTSC L=4.43NTSC
(NTSC:453BIT) (PAL/SECAM: 848.5BIT) (4.43NTSC: 842.5BIT)
BIAS
1/2
CLOCK DRIVER
VCO
CCD (0.5BIT)
CCD (NTSC:908.5BIT) (PAL:1781.5BIT) (4.43NTSC:843.5BIT) (SECAM:OFF)
1/4 (NTSC) 1/3 (PAL/4.43NTSC)
LIM
P.C
DCF.B
H=SECAM M=PAL L=NTSC/4.43NTSC
CGND
5VYC
YGND
CLOCK DRIVE 5V
GND
C3069 0.1
C3090 6V33
C3073 0.1
C3089 6V33
L3015 68µ
L3016 68µ
R3071 220K
C3068 0.01
C3071 0.01
C3072 700P
R3037 820
Q3001 2SB709A (AMP)
Q3002 2SD601A (MUTE)
R3020 470
R3054 10K
Ⓟ OSD VIDEO OUT
Ⓢ A MUTE Ⓗ
Ⓟ TUNER AUDIO
Ⓢ V O MUTE Ⓗ
Ⓟ NTSC 3.58 Ⓗ
Ⓢ EE/VV/TRICK
Ⓢ FSC
Ⓟ GND
(B4)
(B5)
(B7)
(B8)

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.

SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART

REF. NO.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	5.0	5.0	5.0	2.6	2.0	0	0	0	0	0	4.8	0	0	0	2.3	0	0	0	4.7
PLAY	0	5.0	5.0	5.0	2.5	3.5	0	4.6	4.6	0	0	4.8	2.3	0	0	2.3	0	0	0	4.7
REC	0	5.0	4.9	4.9	2.6	2.1	0	0	4.6	0	0	4.8	2.3	0	0	2.3	4.7	4.6	0	4.7
F.F	0	5.0	4.9	4.9	2.5	1.6	0	0	4.6	0	0	4.8	0	0	0	2.3	0	0	0	4.7
REW	0	5.0	4.9	4.9	2.5	1.2	0	0	4.6	4.7	0	4.8	0	0	0	2.3	0	0	0	4.7

REF. NO.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	4.7	0	4.7	0	0	4.6	0	4.7	0	4.7	0	0	0	0	4.7	2.4	2.4	0	0	0
PLAY	4.7	0	2.3	0	0	4.6	0	4.7	0	0.1	0	0	0	0	4.7	2.4	2.4	0	0	0
REC	4.7	4.6	4.6	4.6	0	4.6	0	4.7	0	0.2	0	0	0	0	4.7	2.4	2.4	0	0	0
F.F	4.7	0	4.6	0	4.6	0	0	4.7	0	0.2	0	0	0	0	4.7	2.4	2.4	0	0	0
REW	4.7	0	4.6	0	4.6	0	0	4.7	0	0.2	0	0	0	0	4.7	2.4	2.4	0	0	0

REF. NO.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	4.7	0	4.7	0	0	0	0	4.7	4.7	4.3	4.9	0	0	0	0	0	0.2	4.7	0	0
PLAY	4.7	0	4.7	0	0	0	0	4.6	4.7	4.3	4.9	0	0	0	0	0	0.2	4.6	0	0
REC	4.7	0	4.7	0	0	0	0	4.6	4.7	4.3	4.8	0	0	0	0	0	0.2	4.6	0	0
F.F	4.7	0	4.7	0	0	0	0	4.6	4.7	4.3	4.8	0	0	0	0	0	0.2	4.6	0	0
REW	4.7	0	4.7	0	0	0	0	4.6	4.7	4.3	4.8	0	0	0	0	0	0.2	4.6	0	0

REF. NO.	IC6001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	0	0	4.8	0.3	4.8	4.5	5.0	4.6	0	2.3	0	0	5.0	5.0	0	2.6	5.0	0.1	0	0
PLAY	0	0	4.8	0.3	4.8	4.5	5.0	4.6	0	2.3	0	0	5.0	5.0	2.4	2.4	5.0	4.5	0	0
REC	0	0	4.8	0.3	4.8	4.5	5.0	4.6	0	2.3	0	0	4.9	4.9	2.4	2.4	5.0	4.5	0	0
F.F	0	0	4.8	0.3	4.8	4.5	5.0	4.6	0	2.3	0	0	5.0	5.0	3.8	2.4	2.4	2.4	0	0
REW	0	0	4.8	0.3	4.8	4.5	5.0	4.6	0	2.3	0	0	5.0	5.0	3.8	2.4	2.4	2.4	0	0

REF. NO.	IC6001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	0	2.5	2.5	2.5	1.0	0	2.5	2.5	2.5	2.5	0	0.4	2.5	0	2.5	5.0	4.9	0	0	2.9
PLAY	0	2.5	2.5	2.5	1.0	0	2.5	2.5	2.4	2.4	0	0.4	2.5	0	2.5	4.9	4.9	0	0	2.9
REC	0	2.5	2.5	2.5	1.0	0	2.5	2.5	2.5	2.9	0	4.3	2.4	0	2.5	4.9	4.9	0	0	2.9
F.F	0	2.5	2.5	2.5	1.0	0	2.5	2.5	2.5	2.4	0	0.4	2.5	0	2.5	4.9	4.9	4.9	0	2.9
REW	0	2.5	2.5	2.5	1.0	0	2.5	2.5	2.5	2.4	0	0.4	2.5	0	2.5	4.9	4.9	4.9	0	2.9

REF. NO.	IC6003										IC6004									
MODE	1	2	3								1	2	3							
STOP	4.7	0	4.7								4.8	0	4.9							
PLAY	4.7	0	4.7								4.8	0	4.8							
REC	4.7	0	4.7								4.8	0	4.8							
F.F	4.7	0	4.7								4.8	0	4.8							
REW	4.7	0	4.7								4.8	0	4.8							

REF. NO.	IC6005										IC6006									
MODE	1	2	3	4							1	2	3	4						
STOP	1.1	2.3	0.1	0							0	1.1	5.0	0						
PLAY	1.1	2.3	5.0	0							0	1.1	4.7	0						
REC	1.1	2.3	5.0	0							0	1.1	4.7	0						
F.F	1.1	2.3	2.4	0							0	1.1	2.3	0						
REW	1.1	2.3	2.4	0							0	1.1	2.3	0						

REF. NO.	IC6007																			
MODE	1	2	3	4	5	6	7	8												
STOP	4.9	4.6	4.6	5.0	0	0	5.0	5.0												
PLAY	4.8	4.6	4.6	5.0	0	0	5.0	5.0												
REC	4.8	4.6	4.5	4.9	0	0	4.9	5.0												
F.F	4.8	4.6	4.5	5.0	0	0	5.0	5.0												
REW	4.8	4.6	4.5	5.0	0	0	5.0	5.0												

SYSTEM CONTROL & SERVO TRs DC VOLTAGE CHART

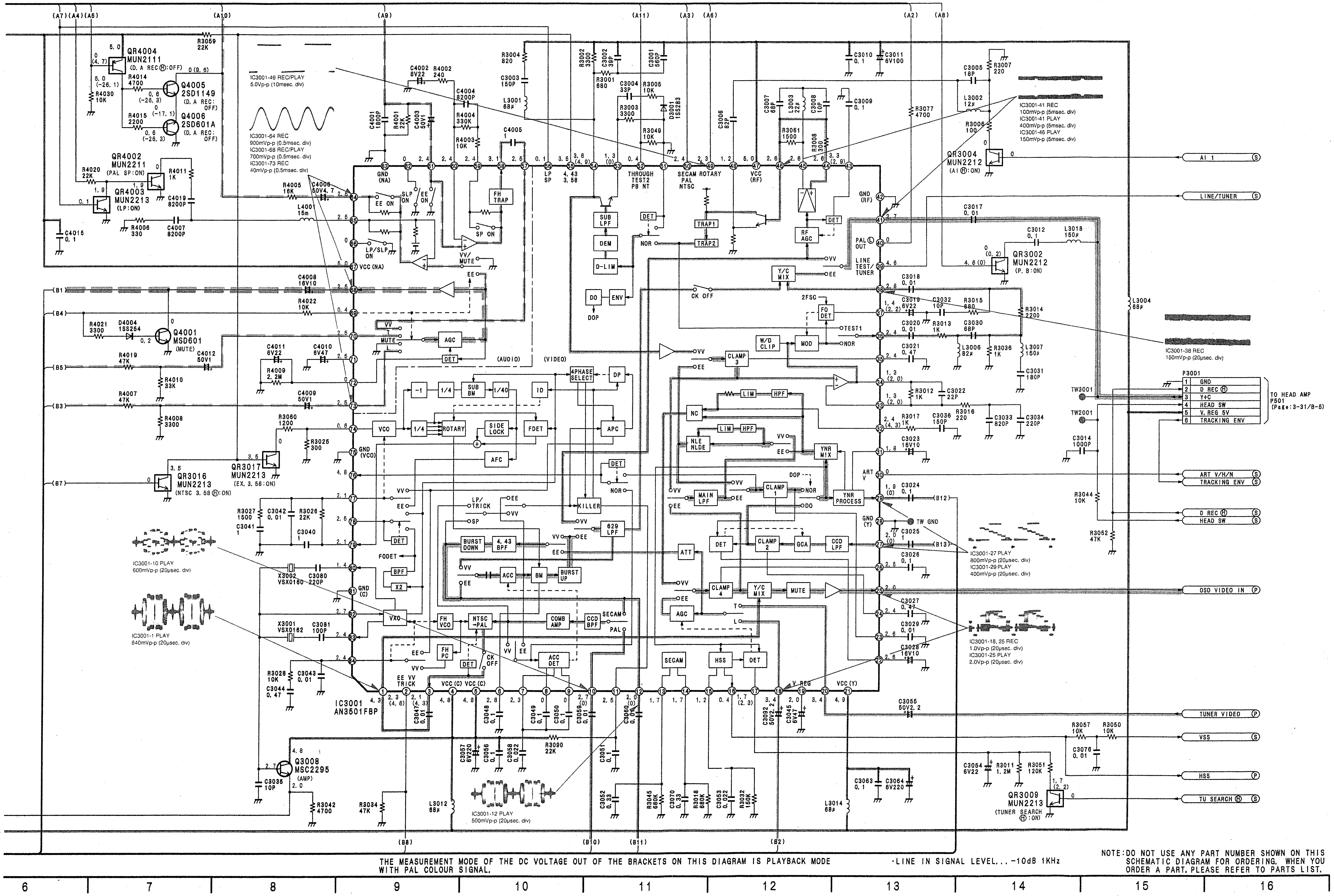
REF. NO.	Q6002			Q6003														
MODE	E	C		E	C													
STOP	0	5.0		0	5.0													
PLAY	0	4.9		0	4.9													
REC	0	4.9		0	4.9													
F.F	0	4.8		0	4.9													
REW	0	4.9		0	4.9													

VIDEO MAIN SIGANL PATH IN REC MODE

VIDEO MAIN SIGANL PATH IN PLAYBACK MODE

AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

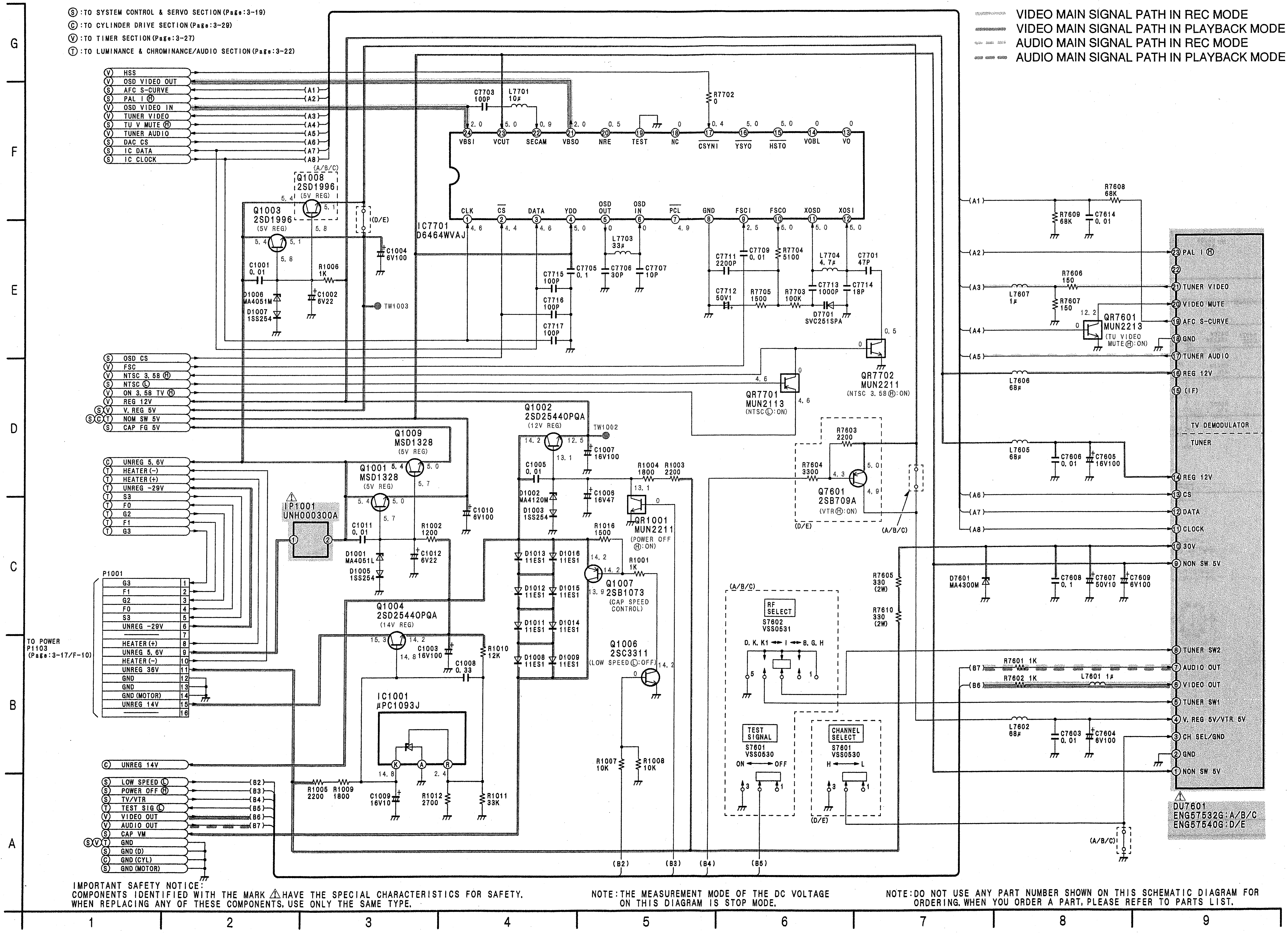

(A7) (A4) (A5)
(A10)
(A9)
(A11)
(A3) (A6)
(A2) (A8)
QR4004
MUN2111
(D. A REC Ⓗ:OFF)
Q4005
2SD1149
(D. A REC: OFF)
Q4006
2SD601A
(D. A REC: OFF)
QR4002
MUN2211
(PAL SP:ON)
QR4003
MUN2213
(LP:ON)
Q4001
MSD601
(MUTE)
QR3017
MUN2213
(EX. 3. 58:ON)
QR3016
MUN2213
(NTSC 3. 58 Ⓗ:ON)
Q3008
MSC2295
(AMP)
QR3004
MUN2212
(AI Ⓗ:ON)
QR3002
MUN2212
(P, B:ON)
QR3009
MUN2213
(TUNER SEARCH Ⓗ:ON)
IC3001
AN3501FBP
IC3001-49 REC/PLAY
5.0Vp-p (10msec. div)
IC3001-64 REC
800mVp-p (0.5msec. div)
IC3001-68 REC/PLAY
700mVp-p (0.5msec. div)
IC3001-73 REC
40mVp-p (0.5msec. div)
IC3001-41 REC
100mVp-p (5msec. div)
IC3001-41 PLAY
400mVp-p (5msec. div)
IC3001-45 PLAY
150mVp-p (5msec. div)
IC3001-38 REC
150mVp-p (20μsec. div)
IC3001-27 PLAY
800mVp-p (20μsec. div)
IC3001-29 PLAY
400mVp-p (20μsec. div)
IC3001-18, 25 REC
1.0Vp-p (20μsec. div)
IC3001-25 PLAY
2.0Vp-p (20μsec. div)
IC3001-10 PLAY
600mVp-p (20μsec. div)
IC3001-1 PLAY
640mVp-p (20μsec. div)
IC3001-12 PLAY
500mVp-p (20μsec. div)
X3002
VSX0160
X3001
VSX0162
GND (NA)
LP SP
THROUGH TEST2 PB NT
SECAM PAL NTSC
ROTARY
VCC (RF)
GND (RF)
PAL OUT
LINE TEST/ TUNER
ART V
GND (Y)
V.REG
VCC (Y)
VCC (C) VCC (C)
GND (VCO)
GND (C)
VCC (NA)
EE ON
SLP ON
EE ON
LP/SLP ON
SP ON
VV/ MUTE
FH TRAP
AGC
DET
(AUDIO)
(VIDEO)
SUB LPF
DEM
D-LIM
DO
ENV
DOP
TRAP1
TRAP2
NOR
RF AGC
Y/C MIX
CK OFF
2FSC
FO DET
TEST1
W/D CLIP
MOD
CLAMP 3
-1
1/4
SUB BM
1/40
ID
4PHASE SELECT
DP
VCO
1/4
ROTARY
SIDE LOCK
FDET
APC
AFC
NC
LIM
HPF
NLE NLDE
YNR MIX
DET
CLAMP 1
MAIN LPF
YNR PROCESS
LP/ TRICK
SP
KILLER
629 LPF
BURST DOWN
4. 43 BPF
ACC
BM
BURST UP
FODET
BPF
X2
VXO
FH VCO
NTSC →PAL
COMB AMP
CCD BPF
SECAM
PAL
FH PC
CK OFF
ACC DET
EE VV TRICK
ATT
CLAMP 2
GCA
CCD LPF
CLAMP 4
Y/C MIX
MUTE
AGC
SECAM
HSS
TW GND
TW3001
TW2001
P3001
1 GND
2 D REC Ⓗ
3 Y+C
4 HEAD SW
5 V. REG 5V
6 TRACKING ENV
TO HEAD AMP P501 (Page:3-31/B-6)
AI 1 Ⓢ
LINE/TUNER Ⓢ
ART V/H/N Ⓢ
TRACKING ENV Ⓢ
D REC Ⓗ Ⓢ
HEAD SW Ⓢ
OSD VIDEO IN Ⓟ
TUNER VIDEO Ⓟ
VSS Ⓢ
HSS Ⓟ
TU SEARCH Ⓗ Ⓢ
(B1) (B4) (B5) (B3) (B7)
(B8) (B10) (B11) (B2)
(B12) (B13)
6
7
8
9
10
11
12
13
14
15
16

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.

·LINE IN SIGNAL LEVEL... -10dB 1KHz

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-8. POWER SUPPLY/OSD/RF SECTION IN MAIN SCHEMATIC DIAGRAM



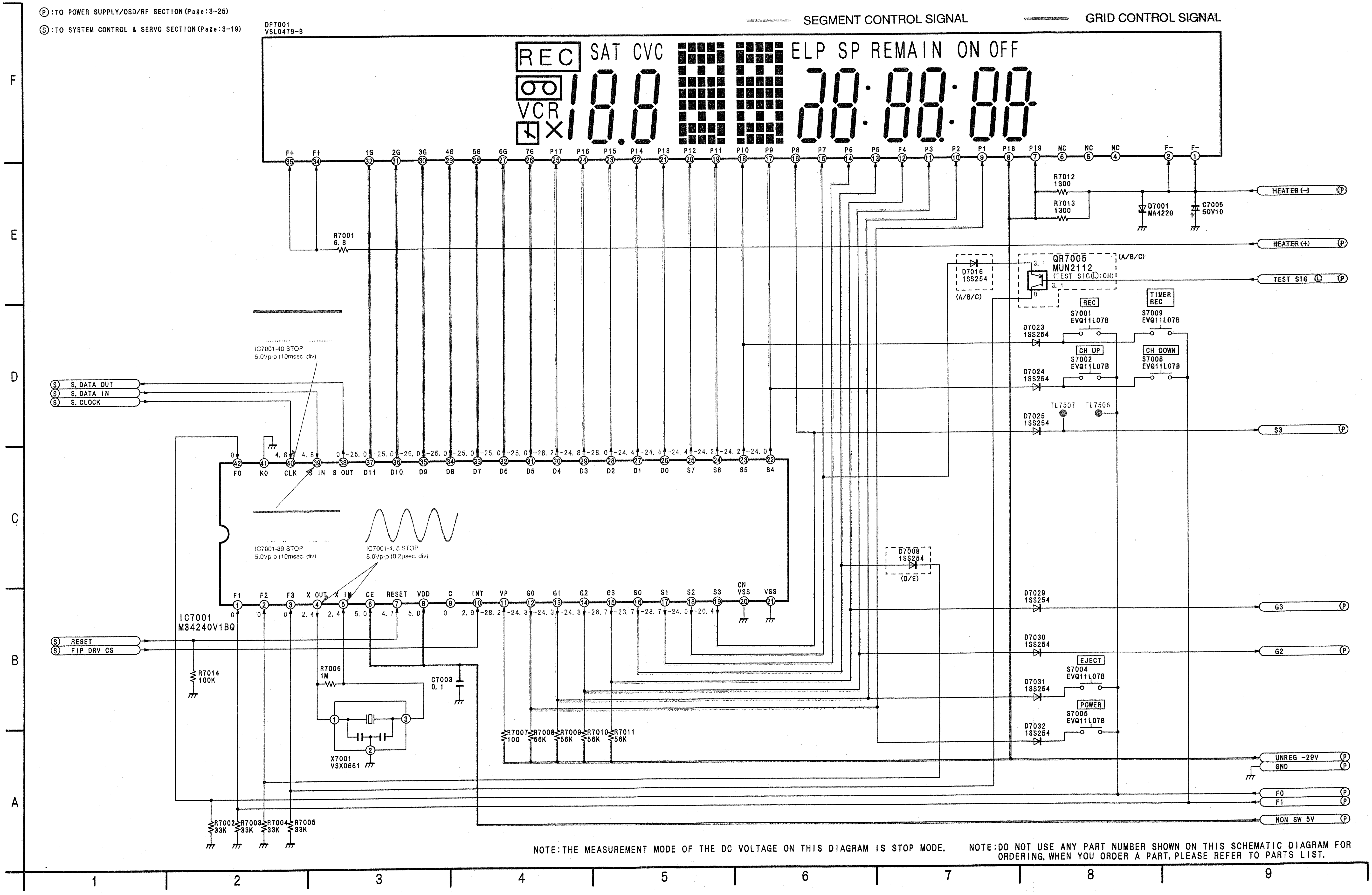
Ⓢ:TO SYSTEM CONTROL & SERVO SECTION(Page:3-19)
Ⓒ:TO CYLINDER DRIVE SECTION(Page:3-29)
Ⓥ:TO TIMER SECTION(Page:3-27)
Ⓣ:TO LUMINANCE & CHROMINANCE/AUDIO SECTION(Page:3-22)
VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE
HSS
OSD VIDEO OUT
AFC S-CURVE
PAL I Ⓗ
OSD VIDEO IN
TUNER VIDEO
TU V MUTE Ⓗ
TUNER AUDIO
DAC CS
IC DATA
IC CLOCK
IC7701
D6464WVAJ
VBSI
VCUT
SECAM
VBSO
NRE
TEST
NC
CSYNI
YSYO
HSTO
VOBL
VO
CLK
CS
DATA
YDD
OSD OUT
OSD IN
PCL
GND
FSCI
FSCO
XOSD
XOSI
Q1008
2SD1996
(5V REG)
Q1003
2SD1996
(5V REG)
(A/B/C)
(D/E)
TW1003
OSD CS
FSC
NTSC 3.58 Ⓗ
NTSC Ⓛ
ON 3.58 TV Ⓗ
REG 12V
V.REG 5V
NOM SW 5V
CAP FG 5V
QR7701
MUN2113
(NTSC Ⓛ:ON)
QR7702
MUN2211
(NTSC 3.58Ⓗ:ON)
Q1002
2SD2544OPQA
(12V REG)
TW1002
Q1009
MSD1328
(5V REG)
Q1001
MSD1328
(5V REG)
IP1001
UNH000300A
Q1004
2SD2544OPQA
(14V REG)
IC1001
μPC1093J
QR1001
MUN2211
(POWER OFF Ⓗ:ON)
Q1007
2SB1073
(CAP SPEED CONTROL)
Q1006
2SC3311
(LOW SPEED Ⓛ:OFF)
Q7601
2SB709A
(VTR Ⓗ:ON)
UNREG 5.6V
HEATER(-)
HEATER(+)
UNREG -29V
S3
F0
G2
F1
G3
P1001
TO POWER P1103 (Page:3-17/F-10)
UNREG 36V
GND
GND (MOTOR)
UNREG 14V
LOW SPEED Ⓛ
POWER OFF Ⓗ
TV/VTR
TEST SIG Ⓛ
VIDEO OUT
AUDIO OUT
CAP VM
GND (D)
GND (CYL)
RF SELECT
S7602
VSS0531
D.K.K1 ← I → B.G.H
TEST SIGNAL
S7601
VSS0530
ON ← → OFF
CHANNEL SELECT
S7601
VSS0530
H ← → L
DU7601
ENG57532G:A/B/C
ENG57540G:D/E
TV DEMODULATOR
TUNER
PAL I Ⓗ
TUNER VIDEO
VIDEO MUTE
AFC S-CURVE
GND
TUNER AUDIO
REG 12V
(IF)
REG 12V
CS
DATA
CLOCK
30V
NON SW 5V
TUNER SW2
AUDIO OUT
VIDEO OUT
TUNER SW1
V.REG 5V/VTR 5V
CH SEL/GND
GND
NON SW 5V
QR7601
MUN2213
(TU VIDEO MUTE Ⓗ:ON)
D7601
MA4300M
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-9. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM



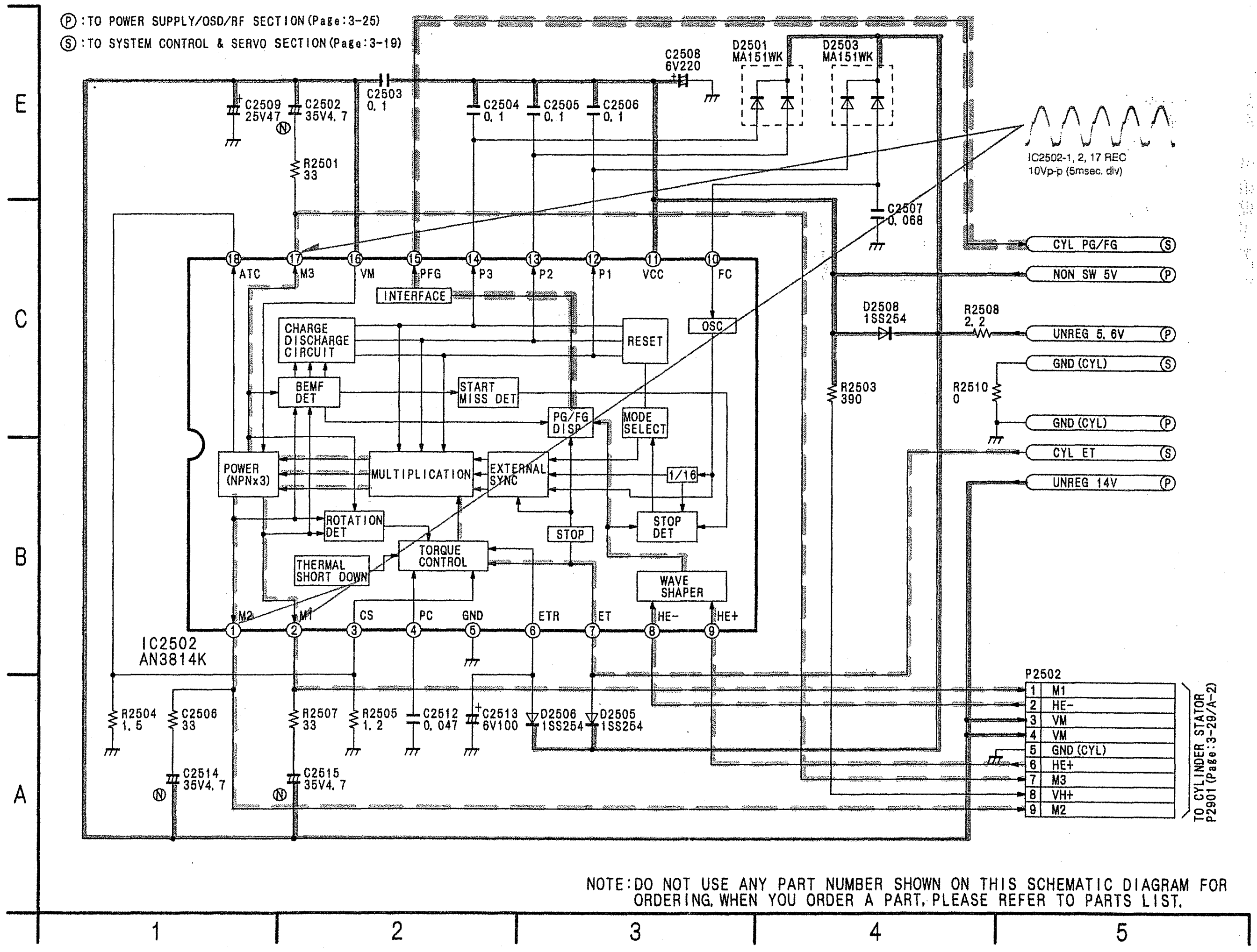
Ⓟ:TO POWER SUPPLY/OSD/RF SECTION(Page:3-25)
Ⓢ:TO SYSTEM CONTROL & SERVO SECTION(Page:3-19)
SEGMENT CONTROL SIGNAL
GRID CONTROL SIGNAL
DP7001
VSL0479-B
REC SAT CVC ELP SP REMAIN ON OFF
VCR
F+ F+ 1G 2G 3G 4G 5G 6G 7G P17 P16 P15 P14 P13 P12 P11 P10 P9 P8 P7 P6 P5 P4 P3 P2 P1 P18 P19 NC NC NC F- F-
R7001
6.8
R7012
1300
R7013
1300
D7001
MA4220
C7005
50V10
HEATER(-)
HEATER(+)
TEST SIG Ⓛ
D7016
1SS254
(A/B/C)
QR7005
MUN2112
(TEST SIGⓁ:ON)
(A/B/C)
REC
S7001
EVQ11L07B
TIMER REC
S7009
EVQ11L07B
D7023
1SS254
CH UP
S7002
EVQ11L07B
CH DOWN
S7006
EVQ11L07B
D7024
1SS254
TL7507
TL7506
D7025
1SS254
S3
IC7001-40 STOP
5.0Vp-p (10msec. div)
S. DATA OUT
S. DATA IN
S. CLOCK
F0 K0 CLK S IN S OUT D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0 S7 S6 S5 S4
IC7001-39 STOP
5.0Vp-p (10msec. div)
IC7001-4, 5 STOP
5.0Vp-p (0.2μsec. div)
D7008
1SS254
(D/E)
F1 F2 F3 X OUT X IN CE RESET VDD C INT VP G0 G1 G2 G3 S0 S1 S2 S3 CN VSS VSS
IC7001
M34240V1BQ
RESET
FIP DRV CS
R7014
100K
R7006
1M
C7003
0.1
X7001
VSX0661
R7007
100
R7008
56K
R7009
56K
R7010
56K
R7011
56K
D7029
1SS254
G3
D7030
1SS254
G2
EJECT
S7004
EVQ11L07B
D7031
1SS254
POWER
S7005
EVQ11L07B
D7032
1SS254
UNREG -29V
GND
F0
F1
NON SW 5V
R7002
33K
R7003
33K
R7004
33K
R7005
33K
F E D C B A
1 2 3 4 5 6 7 8 9

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-10. CYLINDER DRIVE SECTION IN MAIN SCHEMATIC DIAGRAM

CYLINDER SERVO SPEED LOOP — CYLINDER SERVO PHASE LOOP


Ⓟ :TO POWER SUPPLY/OSD/RF SECTION (Page:3-25)
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION (Page:3-19)
IC2502
AN3814K
ATC
M3
VM
PFG
P3
P2
P1
VCC
FC
INTERFACE
CHARGE DISCHARGE CIRCUIT
RESET
OSC
BEMF DET
START MISS DET
PG/FG DISP
MODE SELECT
POWER (NPNx3)
MULTIPLICATION
EXTERNAL SYNC
1/16
ROTATION DET
STOP DET
THERMAL SHORT DOWN
TORQUE CONTROL
STOP
WAVE SHAPER
M2
M1
CS
PC
GND
ETR
ET
HE-
HE+
IC2502-1, 2, 17 REC
10Vp-p (5msec. div)
CYL PG/FG
NON SW 5V
UNREG 5.6V
GND (CYL)
GND (CYL)
CYL ET
UNREG 14V
P2502
TO CYLINDER STATOR P2901 (Page:3-29/A-2)

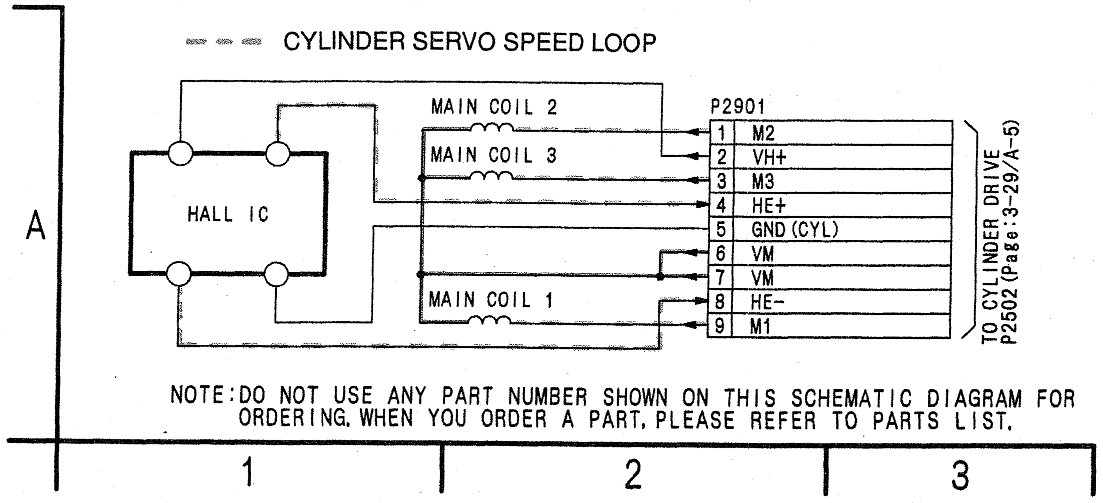
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

CYLINDER DRIVE ICs DC VOLTAGE CHART

REF. NO.	IC2502																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
STOP	13.9	13.9	0	0.5	0	2.5	2.4	1.0	1.0	2.6	5.0	3.7	3.7	3.6	1.0	14.2	13.9	0		
PLAY	13.9	13.9	0	0.5	0	2.5	2.4	1.0	0.9	2.6	5.0	3.6	3.6	3.6	1.0	14.2	13.9	0		
REC	13.9	13.9	0	0.5	0	2.5	2.4	1.0	0.9	2.6	5.0	3.6	3.6	3.6	1.0	14.2	13.9	0		
F.F	14.0	14.0	0	0.5	0	2.5	2.4	1.0	0.9	2.6	5.0	3.6	3.6	3.6	1.0	14.2	14.0	0		
REW	14.0	14.0	0	0.5	0	2.5	2.4	1.0	0.9	2.6	5.0	3.6	3.6	3.6	1.0	14.2	13.9	0		

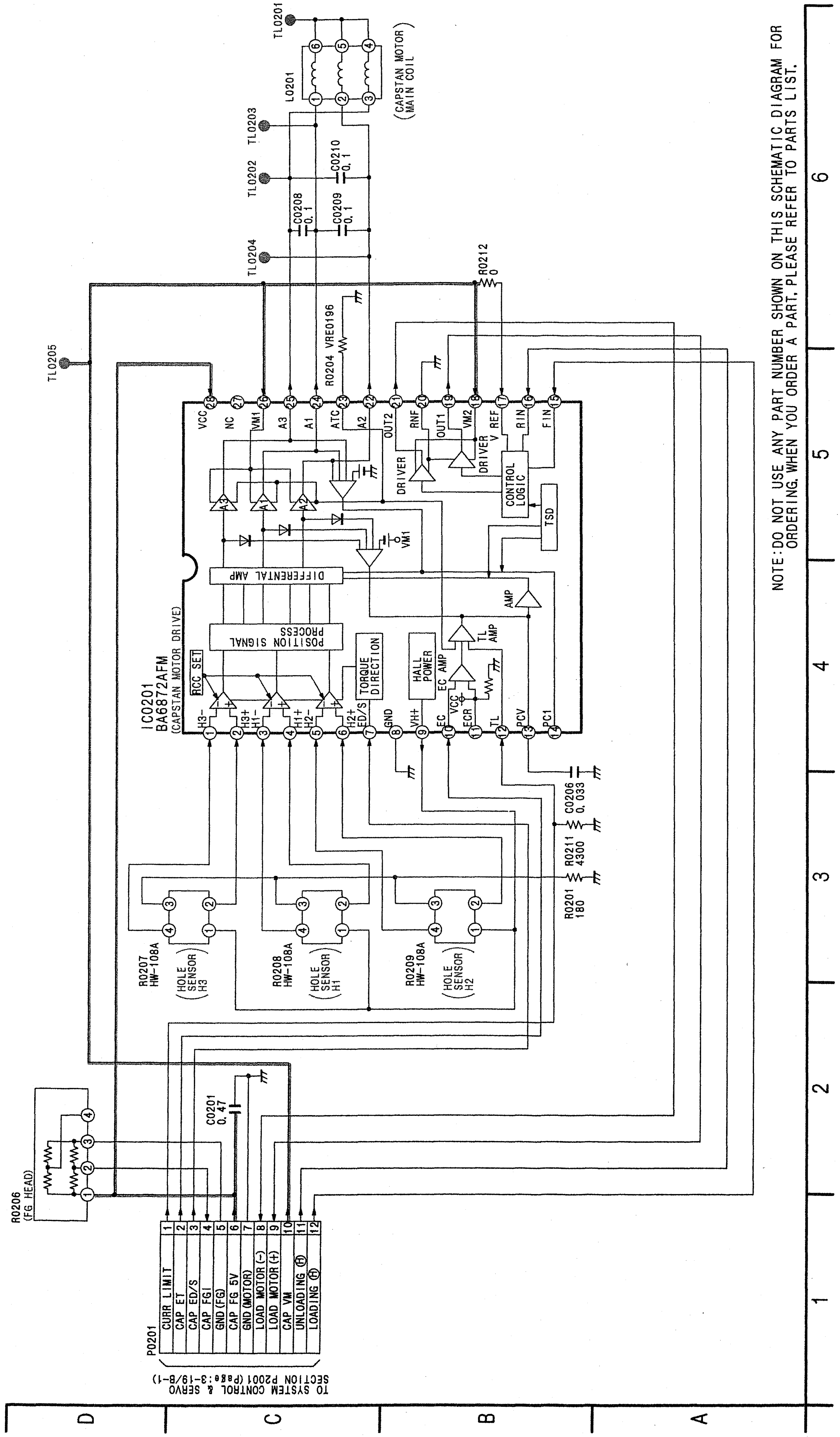
3-11. CYLINDER STATOR UNIT SCHEMATIC DIAGRAM

CYLINDER SERVO SPEED LOOP


HALL IC
MAIN COIL 2
MAIN COIL 3
MAIN COIL 1
P2901
1 M2
2 VH+
3 M3
4 HE+
5 GND (CYL)
6 VM
7 VM
8 HE-
9 M1
TO CYLINDER DRIVE P2502 (Page:3-29/A-5)

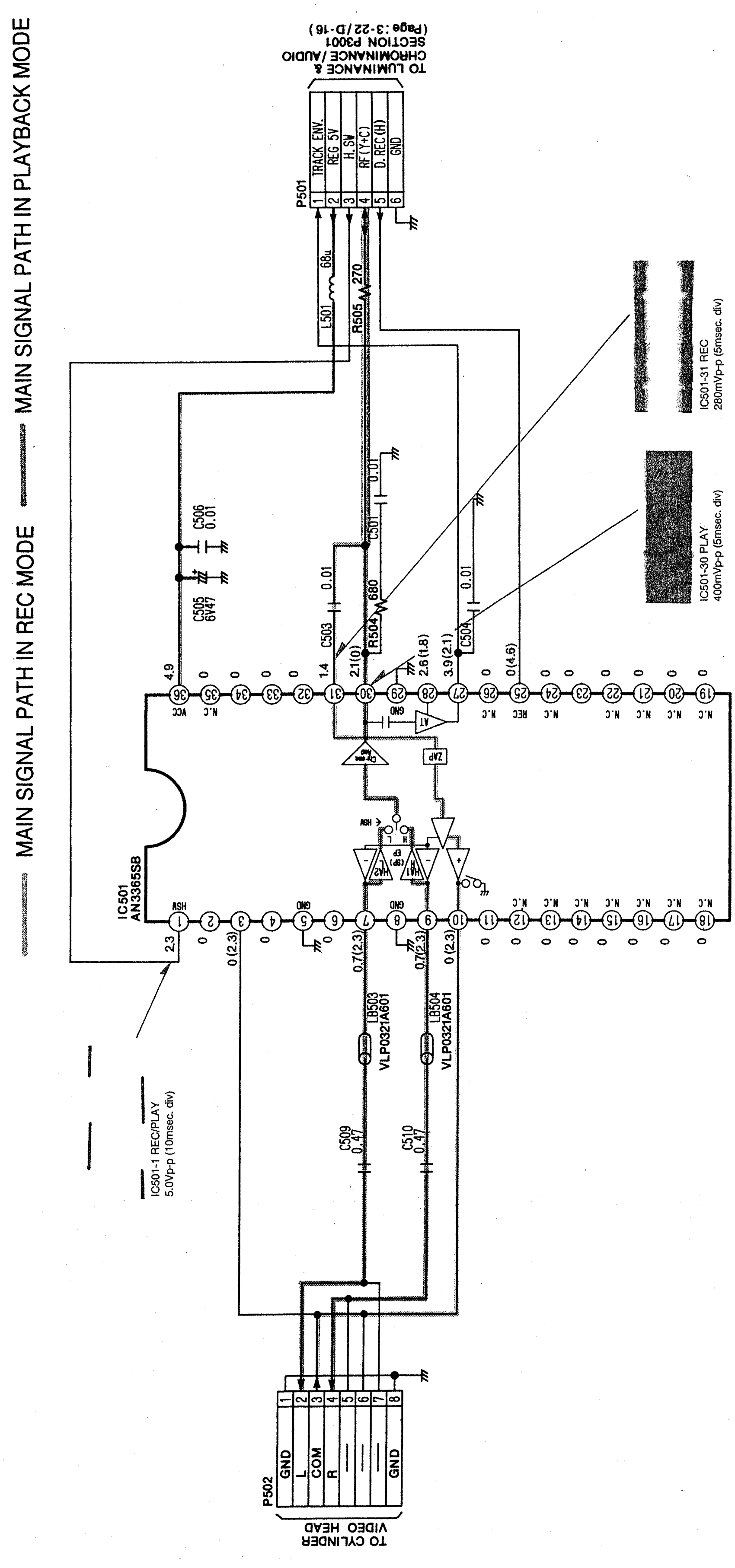
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-12. CAPSTAN UNIT SCHEMATIC DIAGRAM


TL0201
L0201
(CAPSTAN MOTOR MAIN COIL)
TL0203
TL0202
TL0204
TL0205
C0208 0.1
C0209 0.1
C0210 0.1
R0212 0
R0204 VRE0196
IC0201
BA6872AFM
(CAPSTAN MOTOR DRIVE)
DIFFERENTAL AMP
POSITION SIGNAL PROCESS
TORQUE DIRECTION
HALL POWER
EC AMP
TL AMP
AMP
DRIVER
CONTROL LOGIC
TSD
C0206 0.033
R0211 4300
R0201 180
R0207 HW-108A (HOLE SENSOR H3)
R0208 HW-108A (HOLE SENSOR H1)
R0209 HW-108A (HOLE SENSOR H2)
R0206 (FG HEAD)
C0201 0.47
P0201
CURR LIMIT
CAP ET
CAP ED/S
CAP FG
GND (FG)
CAP FG 5V
GND (MOTOR)
LOAD MOTOR (-)
LOAD MOTOR (+)
CAP VM
UNLOADING Ⓗ
LOADING Ⓗ
TO SYSTEM CONTROL & SERVO SECTION P2001 (Page:3-19/B-1)

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

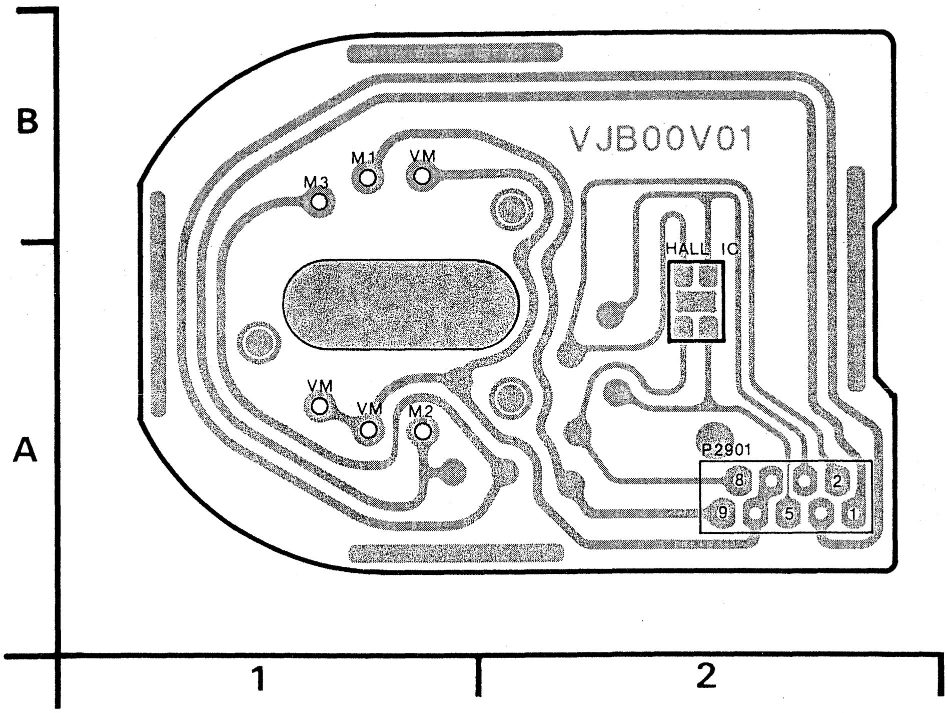
3-13. HEAD AMP SCHEMATIC DIAGRAM


MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE
TO LUMINANCE & CHROMINANCE /AUDIO SECTION P3001 (Page :3-22/D-16)
P501
1 TRACK ENV.
2 REG 5V
3 H.SW
4 RF(Y+C)
5 D.REC(H)
6 GND
L501 68u
R505 270
C506 0.01
C505 6V47
C503 0.01
R504 680
C501 0.01
C504 0.01
IC501 AN3365SB
VCC
N.C
REC
GND
HSW
ZAP
AT
4.9
1.4
2.1(0)
2.6(1.8)
3.9(2.1)
0(4.6)
2.3
0(2.3)
0.7(2.3)
LB503 VLP0321A601
LB504 VLP0321A601
C509 0.47
C510 0.47
IC501-1 REC/PLAY 5.0Vp-p (10msec. div)
IC501-30 PLAY 400mVp-p (5msec. div)
IC501-31 REC 280mVp-p (5msec. div)
P502
1 GND
2 L
3 COM
4 R
8 GND
TO CYLINDER VIDEO HEAD

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-14. CYLINDER STATOR UNIT (VEK7236)



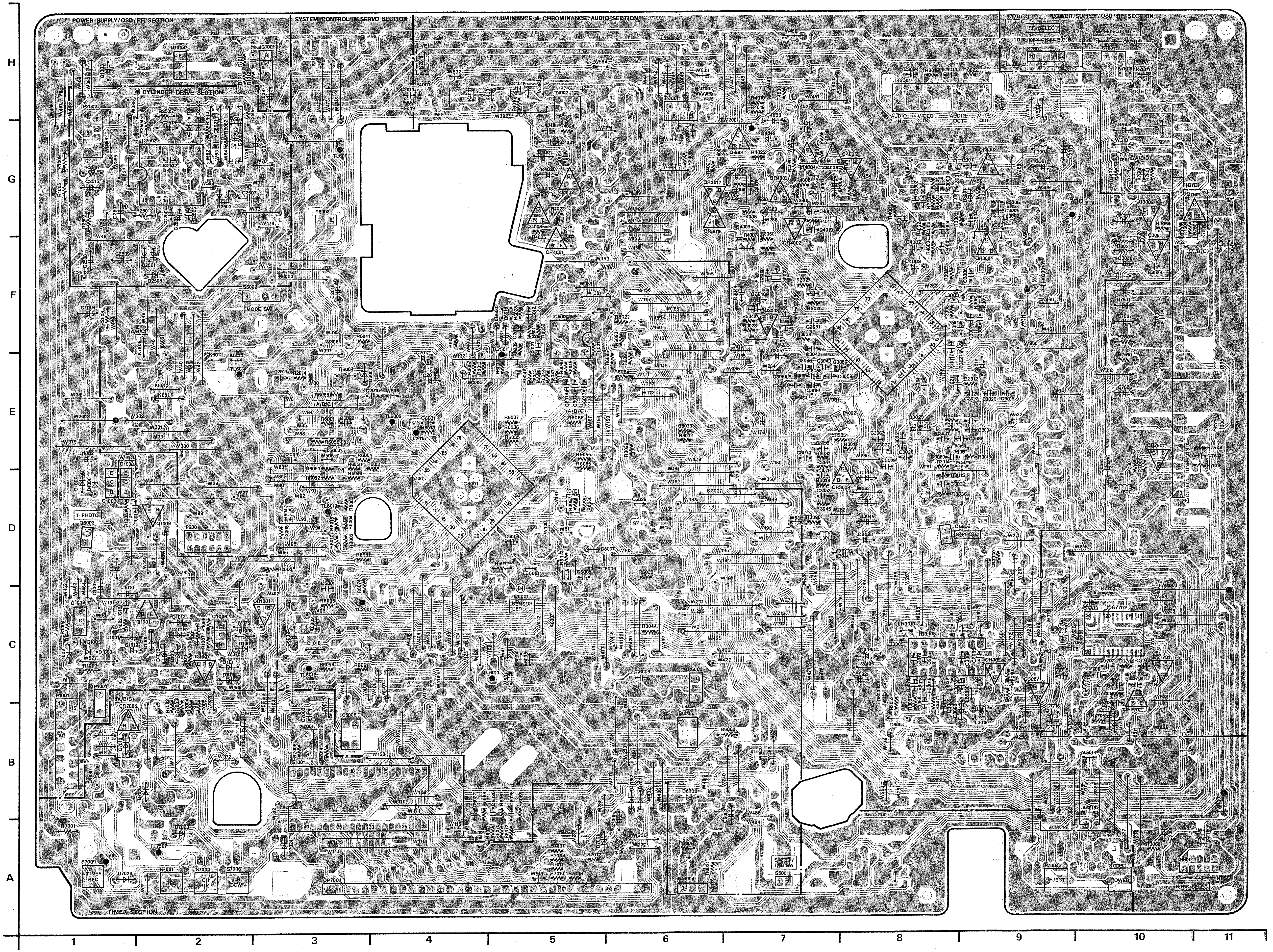
CYLINDER STATOR UNIT	
Integrated Circuit	
HALL IC	A-2
Connector	
P2901	A-2

ADDRESS INFORMATION

MAIN C.B.A.							
Transistor		**Transistor & Resistor**		**Integrated Circuit**			
Q1001	C-2	QR1001	C-3	IC1001	H-3	TL6014	E-2
Q1002	C-1	QR3002	G-9	IC2502	G-2	TL7501	E-5
Q1003	D-1	QR3004	F-9	IC3001	F-8	TL7506	A-1
Q1004	H-2	QR3009	D-8	IC3003	C-8	TL7507	A-2
Q1006	C-2	QR3011	C-9	IC6001	D-4	TW1002	B-11
Q1007	C-2	QR3016	G-6	IC6003	C-6	TW1003	C-10
Q1008	D-1	QR3017	G-6	IC6004	A-6	TW2001	G-7
Q1009	D-2	QR4001	F-5	IC6005	B-6	TW2002	E-1
Q3001	F-10	QR4002	G-7	IC6006	B-3	TW3001	G-9
Q3002	G-10	QR4003	G-7	IC6007	F-5	TWGND	F-9
Q3007	C-9	QR4004	G-7	IC7001	B-3	**Connector**	
Q3008	F-7	QR7005	B-1	IC7701	C-10	P1001	B-1
Q4001	G-7	QR7601	E-10	**Test Point**		P2001	D-2
Q4002	G-5	QR7701	C-10	TL2001	C-3	P2502	H-1
Q4003	G-5	QR7702	B-10	TL2015	E-4	P3001	H-6
Q4005	G-8			TL6001	G-3	P4001	H-4
Q4006	G-7			TL6002	E-4	P4002	E-8
Q6002	D-8			TL6010	D-3	P6002	H-6
Q6003	D-1			TL6012	C-3	P6003	G-3
Q7601	G-11			TL6013	C-5		

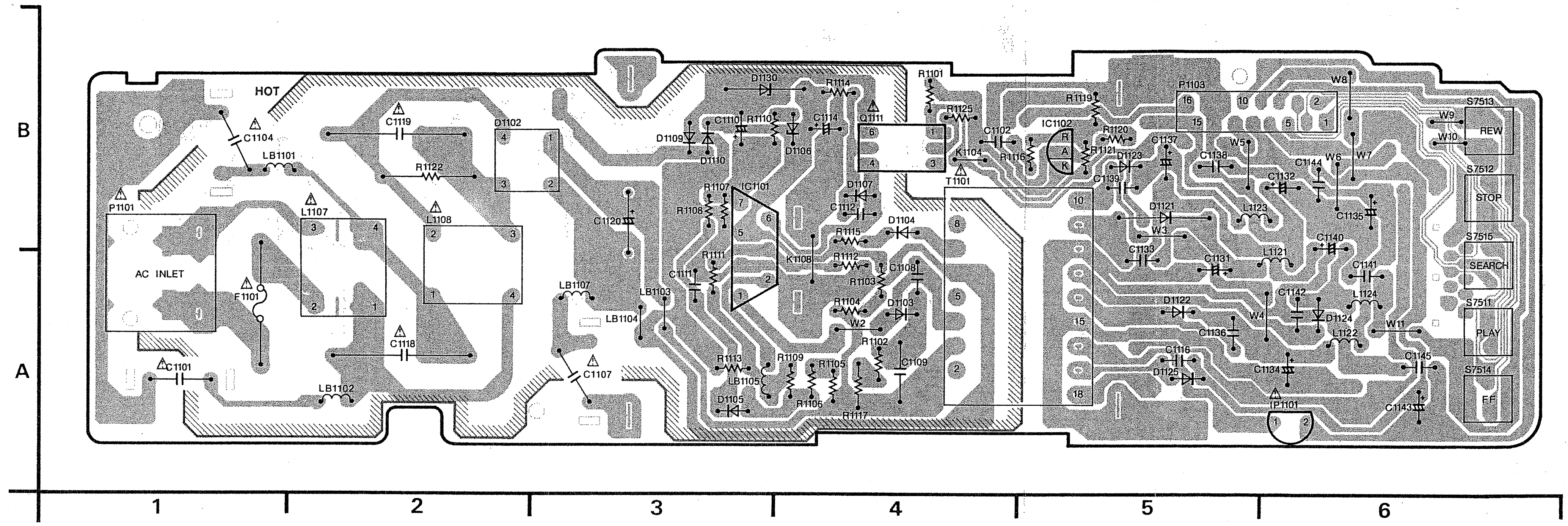
ADDRESS INFORMATION

3-15. MAIN C.B.A. (VEP06B52J: NV-SD225AM/AMJ/EU) (VEP06B52H: NV-SD220AM/AMJ)


POWER SUPPLY/OSD/RF SECTION
SYSTEM CONTROL & SERVO SECTION
LUMINANCE & CHROMINANCE/AUDIO SECTION
POWER SUPPLY/OSD/RF SECTION
CYLINDER DRIVE SECTION
TIMER SECTION
MODE SW
T-PHOTO
S-PHOTO
SENSOR LED
SAFETY TAB SW
TIMER REC
REC
CH UP
CH DOWN
EJECT
POWER
NTSC SELEC
RF SELECT
AUDIO IN
VIDEO IN
AUDIO OUT
VIDEO OUT
IC6001
IC3001
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11

3-16. POWER C.B.A. (VEP01799A: NV-SD225AM/AMJ, SD220AM/AMJ) (VEP01799C: NV-SD225EU)

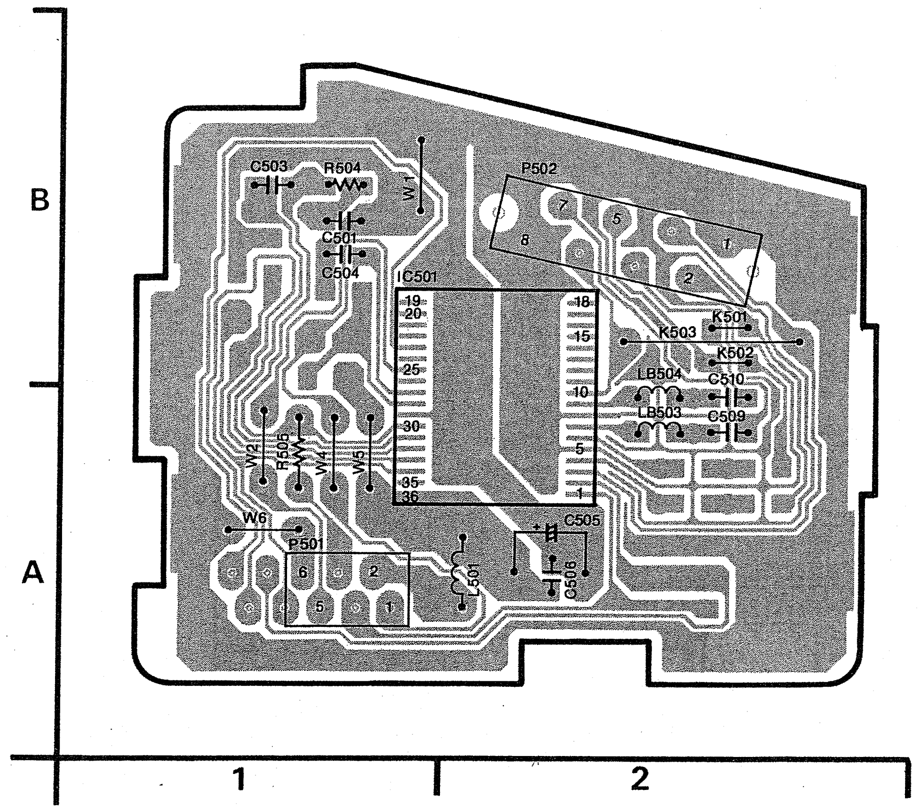
CAUTION THE RED MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.


B
A
1
2
3
4
5
6
HOT
AC INLET
P1101
F1101
C1101
C1104
LB1101
LB1102
L1107
L1108
C1118
C1119
R1122
D1102
C1107
C1120
LB1107
LB1103
LB1104
D1109
D1110
D1130
R1114
C1110
R1110
C1114
D1106
Q1111
R1101
R1125
K1104
T1101
R1107
IC1101
R1108
C1111
R1111
K1106
R1115
R1112
R1103
C1108
D1107
C1112
D1104
R1104
W2
D1103
R1102
C1109
R1113
R1109
R1105
LB1105
D1105
R1106
R1117
C1102
IC1102
R1116
R1119
R1120
R1121
D1123
C1137
C1139
P1103
W8
W5
C1138
W6
W7
C1144
C1132
D1121
W3
L1123
C1135
C1133
C1131
L1121
C1140
C1141
D1122
C1142
L1124
C1136
W4
D1124
L1122
W11
C1116
D1125
C1134
C1145
C1143
P1101
W9
W10
S7513
REW
S7512
STOP
S7515
SEARCH
S7511
PLAY
S7514
FF

POWER C.B.A.	
Transistor	
Q1111	B-4
Integrated Circuit	
IC1101 IC1102	B-3 B-5
Connector	
P1101 P1103	B-1 B-5

ADDRESS INFORMATION

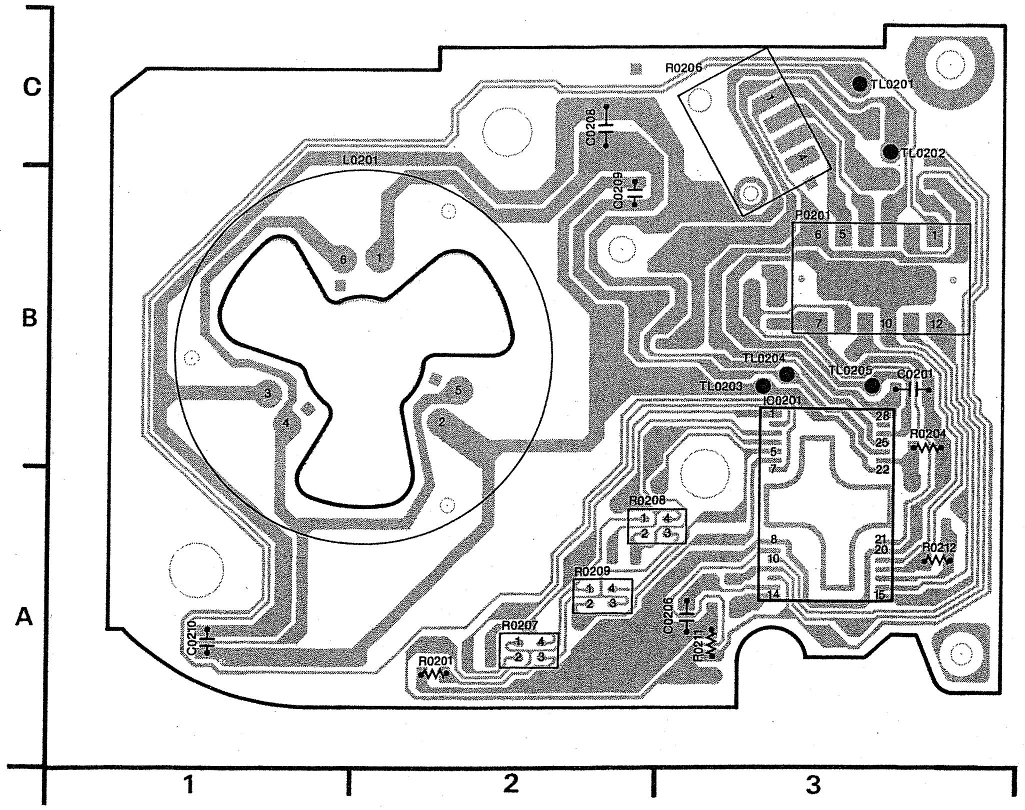
3-17. HEAD AMP C.B.A. (VEP05338B)


B
A
1
2
C503
R504
C501
C504
W1
P502
IC501
K503
K501
K502
LB504
LB503
C510
C509
W2
R505
W4
W5
W6
P501
C505
C506
L501

HEAD AMP C.B.A.	
Integrated Circuit	
IC501	B-2
Connector	
P501 P502	A-1 B-2

ADDRESS INFORMATION

3-18. CAPSTAN UNIT (VEK8024)


C
B
A
1
2
3
R0206
TL0201
TL0202
C0208
C0209
L0201
P0201
TL0204
TL0205
TL0203
C0201
IC0201
R0204
R0208
R0209
R0207
R0201
C0206
R0211
R0212
C0210

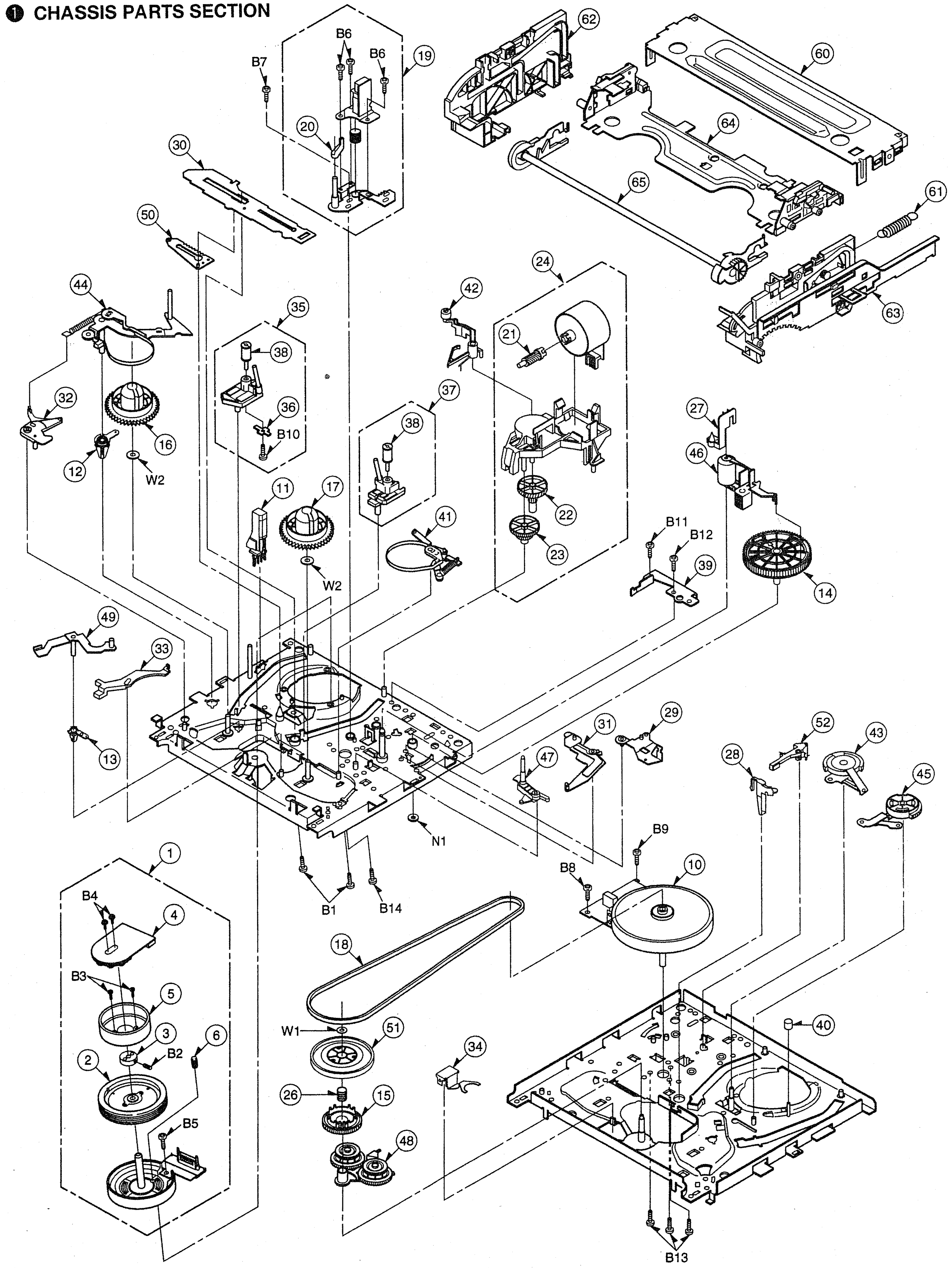
CAPSTAN DRIVE UNIT	
Integrated Circuit	
IC0201	B-3
Test Point	
TL0201 TL0202 TL0203 TL0204 TL0205	C-3 C-3 B-3 B-3 B-3
Connector	
P0201	B-3

ADDRESS INFORMATION

SECTION 4
EXPLODED VIEWS & PARTS LIST

4-1. EXPLODED VIEW & MECHANICAL REPLACEMENT PARTS LIST

❶ CHASSIS PARTS SECTION

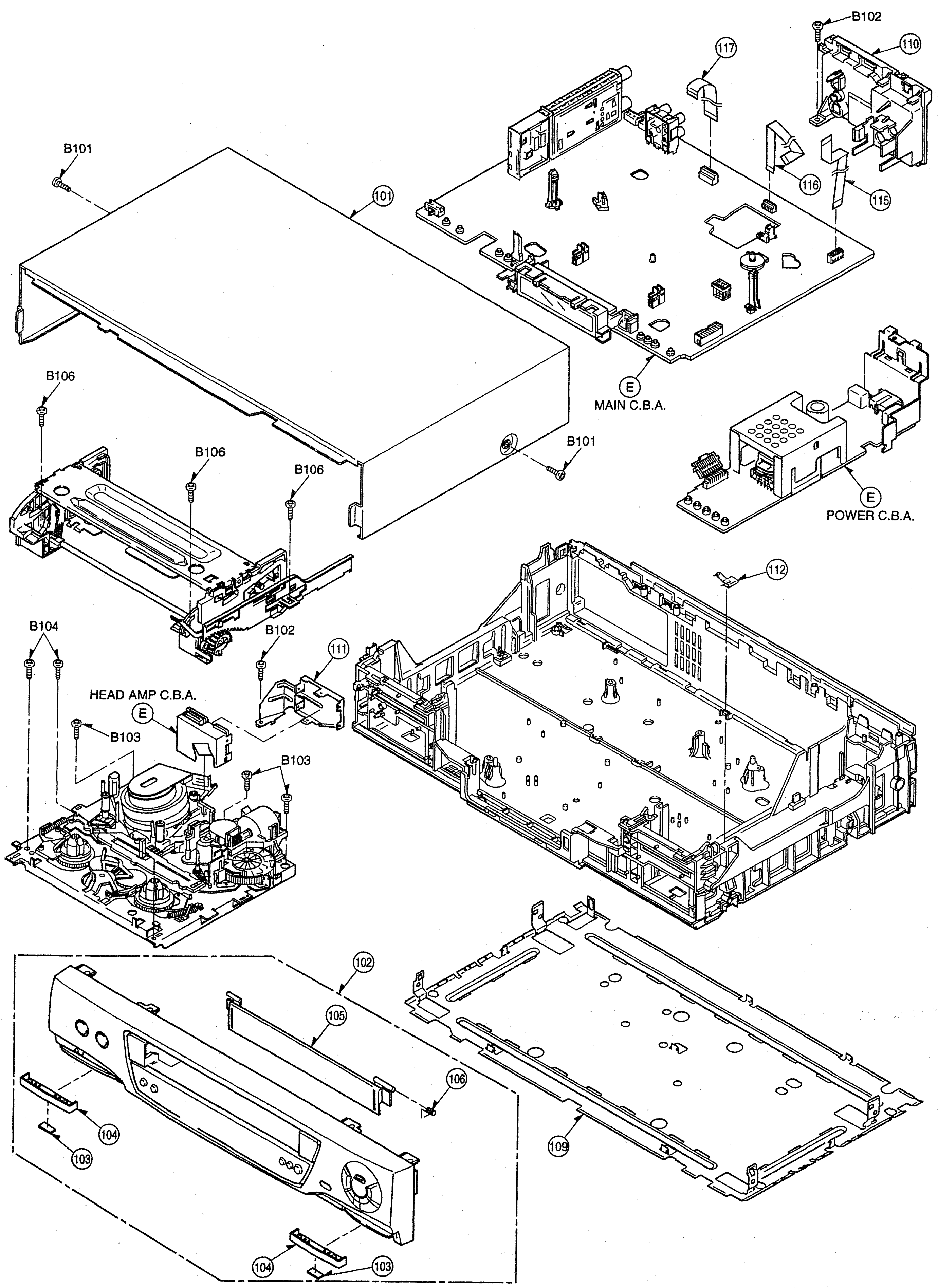


Note: 1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1 (1)	VEG1421	CYLINDER UNIT	1	[SUPPLIED FROM MAV]
2 (1)	VEH0712	UPPER CYLINDER UNIT	1	
3 (1)	VDB1256	CYLINDER RETAINER	1	
⚠ 4 (1)	VEK7236	CYLINDER STATOR UNIT	1	
5 (1)	VXP1823	CYLINDER ROTOR UNIT	1	
6 (1)	VXS0135	EARTH BRUSH UNIT	1	
10 (1)	VEK8024	CAPSTAN UNIT	1	
11 (1)	VBS0155	FE HEAD	1	
12 (1)	VDB1431	TENSION ARM BOSS	1	
13 (1)	VDB1460	SUPPLY BRAKE ARM BOSS	1	
14 (1)	VDG1220	MAIN CAM GEAR	1	
15 (1)	VDG1221	CONVERSION GEAR	1	
16 (1)	VDR0346	SUPPLY REEL TABLE	1	
17 (1)	VDR0347	TAKE UP REEL TABLE	1	
18 (1)	VDV0372	CAPSTAN BELT	1	
19 (1)	VED0363	A/C HEAD UNIT	1	
20 (1)	VMX2656	P4 CAP	1	
21 (1)	VDG1217	WORM GEAR	1	
22 (1)	VDG1218	WORM WHEEL GEAR	1	
23 (1)	VDG1219	CENTRE GEAR	1	
24 (1)	VEM0604	LOADING MOTOR UNIT	1	
26 (1)	VMB3045	CONVERSION GEAR SPRING	1	
27 (1)	VMD2620	OPENER PIECE	1	
28 (1)	VMD2738	LED PRISM	1	
29 (1)	VML3165	DRIVE RACK ARM	1	
30 (1)	VML3166	MAIN LEVER	1	
31 (1)	VML3167	DRIVE MAIN LEVER ARM	1	
32 (1)	VML3172	SUPPLY SPRING ARM	1	
33 (1)	VML3176	CONVERSION LEVER A	1	
34 (1)	VML3177	CONVERSION LEVER B	1	
35 (1)	VXA5743	INCLINED BASE (S) UNIT	1	
36 (1)	VMA9665	INCLINED BASE HOLDER (S)	1	
37 (1)	VXA5854	INCLINED BASE (T) UNIT	1	
38 (1)	VXP1826	ROLLER POST	2	
39 (1)	VMA9672	SUPPORT ANGLE	1	
40 (1)	VMX2639	CIRCUIT BOARD PROTECTOR	1	
41 (1)	VXL2667	TAKE UP BRAKE ARM UNIT	1	
42 (1)	VXL2669	CLEANER ARM UNIT	1	
43 (1)	VXL2670	TAKE UP LOADING ARM UNIT	1	
44 (1)	VXL2671	TENSION ARM UNIT	1	
45 (1)	VXL2672	SUPPLY LOADING ARM UNIT	1	
46 (1)	VXL2676	PINCH ARM UNIT	1	
47 (1)	VXL2677	P5 ARM UNIT	1	
48 (1)	VXL2678	IDLER ARM UNIT	1	
49 (1)	VXL2737	SUPPLY BRAKE ARM UNIT	1	
50 (1)	VXL2747	LOADING RACK UNIT	1	
51 (1)	VXP1732	CENTRE CLUTCH UNIT	1	
52 (1)	VXZ0430	SS BRAKE ARM UNIT	1	
60 (1)	VMA9516	TOP PLATE	1	
61 (1)	VMB3047	CONNECTION SPRING	1	
62 (1)	VMD2625	SIDE PLATE (L)	1	
63 (1)	VXA5740	SIDE PLATE (R) UNIT	1	
64 (1)	VXA5746	CASSETTE HOLDER UNIT	1	
65 (1)	VXP1730	MAIN SHAFT UNIT	1	
B1 (1)	VHD0800	SCREW	2	
B2 (1)	VHD0842	SCREW	1	
B3 (1)	VHD0843	SCREW	2	
B4 (1)	VHD0844	SCREW	2	
B5 (1)	XYN26+C5	SCREW	1	
B6 (1)	VHD1066	SCREW	3	
B7 (1)	VHD1044	SCREW	1	
B8 (1)	VHD1060	SCREW	1	
B9 (1)	VHD1071	SCREW	1	
B10 (1)	XQN2+AG6	SCREW	1	
B11 (1)	XTS26+6F	SCREW	1	
B12 (1)	XTN26+6F	SCREW	1	
B13 (1)	XTN26+7J	SCREW	3	
B14 (1)	VHD1095	SCREW	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
N1 (1)	VHN0311	PUSH NUT	1	
W1 (1)	VMX2208	WASHER	1	
W2 (1)	VMX2650	WASHER	2	

❷ CASING PARTS SECTION



Note: 1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
101 (2)	VGM1364	TOP PANEL	1	
102 (2)	VYP6512	FRONT PANEL UNIT	1	[SUPPLIED FROM MAV]
				NV-SD225AM/EU
102 (2)	VYP6511	FRONT PANEL UNIT	1	[SUPPLIED FROM MAV]
				NV-SD225AMJ
102 (2)	VYP6507	FRONT PANEL UNIT	1	[SUPPLIED FROM MAV]
				NV-SD220AM
102 (2)	VYP6506	FRONT PANEL UNIT	1	[SUPPLIED FROM MAV]
				NV-SD220AMJ
103 (2)	VKA0122	FOOT	2	
104 (2)	VKA0303	LEG	1	
105 (2)	VKF2667	BLINDER PANEL	1	
106 (2)	VMB2521	BLINDER SPRING	1	
109 (2)	VKU0519	BOTTOM PLATE	1	
110 (2)	VJH0973	ANTENNA JACK PLATE	1	NV-SD225AM/AMJ/EU
110 (2)	VJH0972	ANTENNA JACK PLATE	1	NV-SD220AM/AMJ
111 (2)	VSC4564	H. A SHIELD PLATE (BOTTOM)	1	
112 (2)	VMC1065	EARTH SPRING	1	
115 (2)	VWJ1125	FLAT CARD CABLE	1	P2502-P2901
116 (2)	VWJ1128	FLAT CARD CABLE	1	P4001-P1503
117 (2)	VWJ06HW092BB	FLAT CARD CABLE	1	[SUPPLIED FROM MAV]
				P3001-P501
B101 (2)	XTW3+10TFZ	SCREW	2	
B102 (2)	VHD0773	SCREW	2	
B103 (2)	VHD1065	SCREW	3	
B104 (2)	VHD0168	SCREW	2	
B106 (2)	XTV26+8FR	SCREW	3	

Note: 1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

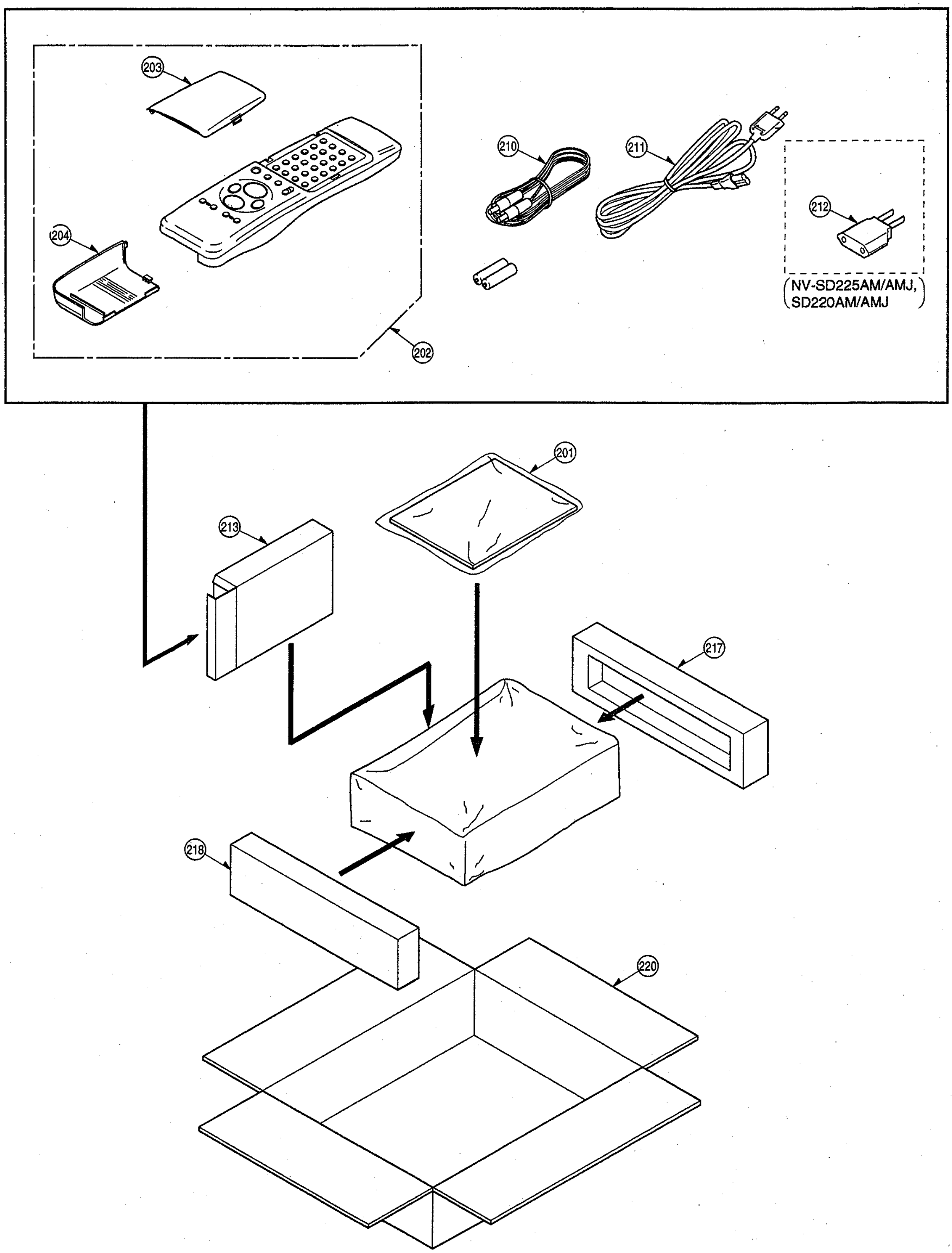
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ 201 (3)	VQT6966	OPERATING INSTRUCTIONS	1	[SUPPLIED FROM MAV]
		(ENGLISH/RUSSIAN/ARABIC)		NV-SD225AM/AMJ
⚠ 201 (3)	VQT6962	OPERATING INSTRUCTIONS	1	[SUPPLIED FROM MAV]
		(ENGLISH/RUSSIAN/POLISH)		NV-SD225EU
⚠ 201 (3)	VQT6963	OPERATING INSTRUCTIONS	1	[SUPPLIED FROM MAV]
		(CZECH/HUNGARIAN)		NV-SD225EU
⚠ 201 (3)	VQT6961	OPERATING INSTRUCTIONS	1	[SUPPLIED FROM MAV]
		(ENGLISH/ARABIC)		NV-SD220AM/AMJ
202 (3)	VEQ1962	REMOTE CONTROLLER	1	
203 (3)	VGP3632	DOOR PANEL	1	
204 (3)	VKF2115	BATTERY COVER	1	
210 (3)	VJA0376	DIN RF CABLE	1	
⚠ 211 (3)	VJA0713	AC CORD	1	NV-SD225AM/AMJ
				NV-SD220AM/AMJ
⚠ 211 (3)	VJA0664	AC CORD	1	[SUPPLIED FROM MAV]
				NV-SD225EU
⚠ 212 (3)	VJP2974	AC PLUG ADAPTOR	1	NV-SD225AM/AMJ
				NV-SD220AM/AMJ
213 (3)	VPK1726	ACCESSORIES PACKING	1	
217 (3)	VPN4545	CUSHION (R)	1	
218 (3)	VPN4546	CUSHION (L)	1	
220 (3)	VPG8925	PACKING CASE	1	[SUPPLIED FROM MAV]
				NV-SD225AM
220 (3)	VPG8924	PACKING CASE	1	[SUPPLIED FROM MAV]
				NV-SD225AMJ
220 (3)	VPG8920	PACKING CASE	1	[SUPPLIED FROM MAV]
				NV-SD225EU
220 (3)	VPG8919	PACKING CASE	1	[SUPPLIED FROM MAV]
				NV-SD220AM
220 (3)	VPG8918	PACKING CASE	1	[SUPPLIED FROM MAV]
				NV-SD220AMJ
		SERVICE FIXTURES & TOOLS		
	VFJ8125H3F	VHS ALIGNMENT TAPE (PAL)	1	
	VFK0335	RETAINING RING REMOVER	1	
		(3MM/4MM)		
	VFK0329	POST ADJUSTMENT SCREWDRIVER	1	
	VFK0326	HEX WRENCH SET	1	
	VFK0132	BACK TENSION METER	1	
	VFK27	HEAD CLEANING STICK	1	
	VFK1024	MOLYTONE GREASE	1	
	VFK0680	WHITE GREASE	1	
	VFK0330	FINE ADJUSTMENT GEAR DRIVER	1	
	VFK2744	16P EXTENSION CABLE	1	
	VFK1301	SILICONE GREASE	1	
	VFK1298	FLOIL GREASE	1	

4-2. ELECTRICAL REPLACEMENT PARTS LIST

Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE : Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS(uf), P=uuF.
4. The P.C. Board units marked width "■" show below the main assembled parts.
5. The marking (RTL) indicaters the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
■	VEP06B52J	MAIN C.B.A.	1	[SUPPLIED FROM MAV]
		(Page:4-6)		(RTL)
				NV-SD225AM/AMJ/EU
■	VEP06B52H	MAIN C.B.A.	1	[SUPPLIED FROM MAV]
		(Page:4-9)		(RTL)
				NV-SD220AM/AMJ
■	VEP05338B	HEAD AMP C.B.A.	1	[SUPPLIED FROM MAV]
		(Page:4-12)		(RTL)
⚠ ■	VEP01799A	SWITCH POWER C.B.A.	1	[SUPPLIED FROM MAV]
		(Page:4-12)		(RTL)
				NV-SD225AM/AMJ
				NV-SD220AM/AMJ
⚠ ■➤	VEP01799C	SWITCH POWER C.B.A.	1	[SUPPLIED FROM MAV]
		(Page:4-13)		(RTL)
				NV-SD225EU
■	----------	CYLINDER STATOR C.B.A.	1	C.B.A. IS INCLUDED IN
		(Page:4-14)		CYLINDER STATOR UNIT
				(VEK7236).
■	----------	CAPSTAN DRIVE C.B.A.	1	C.B.A. IS INCLUDED IN
		(Page:4-14)		CAPSTAN UNIT (VEK8024).
⚠ DU7601	ENG57532G	TUNER	1	NV-SD225AM/AMJ/EU
⚠ DU7601	ENG57540G	TUNER	1	NV-SD220AM/AMJ
⚠ F1101	XBA2C16TB0	FUSE	1	
■	VEP06B52J	MAIN C.B.A.		[SUPPLIED FROM MAV]
				(RTL)
				NV-SD225AM/AMJ/EU
C1001	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C1002	ECEA0JKA220	E.CAPACITOR 6.3V 22U	1	
C1003	ECEA1CU101	E.CAPACITOR 16V 100U	1	
C1004	ECEA0JKA101	E.CAPACITOR 6.3V 100U	1	
C1005	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C1006	ECEA1CU470	E.CAPACITOR 16V 47U	1	
C1007	ECEA1CU101	E.CAPACITOR 16V 100U	1	
C1008	ECUM1C334ZFN	C.CAPACITOR CH 16V 0.33U	1	
C1009	ECEA1CKA100	E.CAPACITOR 16V 10U	1	
C1010	ECEA0JKA101	E.CAPACITOR 6.3V 100U	1	
C1011	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C1012	ECEA0JKA220	E.CAPACITOR 6.3V 22U	1	
C2009	ECUM1E683KBN	C.CAPACITOR CH 25V 0.068U	1	
C2010	ECUM1H392KBN	C.CAPACITOR CH 50V 3900P	1	
C2012	ECEA1CKN100	E.CAPACITOR 16V 10U	1	
C2013	ECUM1H222KBN	C.CAPACITOR CH 50V 2200P	1	
C2014	ECEA0JKA221	E.CAPACITOR 6.3V 220U	1	
C2015	ECEA1HKA4R7	E.CAPACITOR 50V 4.7U	1	
C2017	ECUM1C474ZFN	C.CAPACITOR CH 16V 0.47U	1	
C2018	ECUM1H472KBN	C.CAPACITOR CH 50V 4700P	1	
C2021	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C2502	ECEA1VKN4R7	E.CAPACITOR 35V 4.7U	1	
C2503	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C2504-06	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	3	
C2507	ECQV1H683B46	P.CAPACITOR 50V 0.068U	1	
C2508	ECEA0JKA221	E.CAPACITOR 6.3V 220U	1	
C2509	ECEA1EKA470	E.CAPACITOR 25V 47U	1	
C2512	ECUM1H473ZFN	C.CAPACITOR CH 50V 0.047U	1	
C2513	ECEA0JKA101	E.CAPACITOR 6.3V 100U	1	
C2514,15	ECEA1VKN4R7	E.CAPACITOR 35V 4.7U	2	
C3001	ECUX1H561JCN	C.CAPACITOR CH 50V 560P	1	
C3002	ECUM1H390JCN	C.CAPACITOR CH 50V 39P	1	
C3003	ECUM1H151JCN	C.CAPACITOR CH 50V 150P	1	
C3004	ECUM1H330JCN	C.CAPACITOR CH 50V 33P	1	
C3005	ECUM1H180JCN	C.CAPACITOR CH 50V 18P	1	
C3006	ECUM1H820JCN	C.CAPACITOR CH 50V 82P	1	
C3007	ECUM1H680JCN	C.CAPACITOR CH 50V 68P	1	
C3008	ECUM1H100DCN	C.CAPACITOR CH 50V 10P	1	
C3009	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C3010	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3011	ECEA0JKA101	E.CAPACITOR 6.3V 100U	1	
C3012	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C3013	ECEA1HKA4R7	E.CAPACITOR 50V 4.7U	1	
C3014	ECUM1H102KBN	C.CAPACITOR CH 50V 1000P	1	
C3017,18	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	2	
C3019	ECEA0JKA220	E.CAPACITOR 6.3V 22U	1	
C3020	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C3021	ECUM1C474KBM	C.CAPACITOR CH 16V 0.47U	1	
C3022	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	1	
C3023	ECEA1CKA100	E.CAPACITOR 16V 10U	1	
C3024	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3025	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C3026	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C3027	ECUM1C474KBM	C.CAPACITOR CH 16V 0.47U	1	
C3028	ECEA1CKA100	E.CAPACITOR 16V 10U	1	
C3029	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C3030	ECUM1H680JCN	C.CAPACITOR CH 50V 68P	1	
C3031	ECUM1H181JCN	C.CAPACITOR CH 50V 180P	1	
C3032	ECUM1H100DCN	C.CAPACITOR CH 50V 10P	1	
C3033	ECUM1H821JCN	C.CAPACITOR CH 50V 820P	1	
C3034	ECUM1H221JCN	C.CAPACITOR CH 50V 220P	1	
C3035	ECUM1H100DCN	C.CAPACITOR CH 50V 10P	1	
C3036	ECUM1H151JCN	C.CAPACITOR CH 50V 150P	1	
C3037	ECA0JM471	E.CAPACITOR 6.3V 470U	1	
C3038	ECEA1CKA470	E.CAPACITOR 16V 47U	1	
C3039	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C3040,41	ECUM1C105KBM	C.CAPACITOR CH 16V 1U	2	
C3042,43	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	2	
C3044	ECUM1C474ZFM	C.CAPACITOR CH 16V 0.47U	1	
C3045	ECEA0JKA470	E.CAPACITOR 6.3V 47U	1	
C3047	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C3048	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3049-51	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	3	
C3052	ECUM1C334KBN	C.CAPACITOR CH 16V 0.33U	1	
C3053	ECUM1H223KBN	C.CAPACITOR CH 50V 0.022U	1	
C3054	ECEA0JKA220	E.CAPACITOR 6.3V 22U	1	
C3055	ECEA1HKA2R2	E.CAPACITOR 50V 2.2U	1	
C3056	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3057	ECEA0JKA221	E.CAPACITOR 6.3V 220U	1	
C3058	ECUM1E223KBN	C.CAPACITOR CH 25V 0.022U	1	
C3059,60	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	2	
C3063	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3064	ECEA0JKA221	E.CAPACITOR 6.3V 220U	1	
C3065	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C3066	ECEA1HKA010	E.CAPACITOR 50V 1U	1	
C3067	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3068	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C3069	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3070	ECUM1C334KBN	C.CAPACITOR CH 16V 0.33U	1	
C3071	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C3072	ECUM1H472KBN	C.CAPACITOR CH 50V 4700P	1	
C3073	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3076	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C3080	ECUM1H221JCN	C.CAPACITOR CH 50V 220P	1	
C3081	ECUM1H101JCN	C.CAPACITOR CH 50V 100P	1	
C3089,90	ECEA0JKA330	E.CAPACOTOR 6.3V 33U	2	
C3092	ECEA1HKA2R2	E.CAPACITOR 50V 2.2U	1	
C3094	ECUM1H471JCN	C.CAPACITOR CH 50V 470P	1	
C4001	ECUM1H182JCN	C.CAPACITOR CH 50V 1800P	1	
C4002	ECEA0JKA220	E.CAPACITOR 6.3V 22U	1	
C4003	ECEA1HKA010	E.CAPACITOR 50V 1U	1	
C4004	ECUM1H822KBN	C.CAPACITOR CH 50V 8200P	1	

❸ PACKING PARTS SECTION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(NV-SD225AM/AMJ,
SD220AM/AMJ)
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Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C4005	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C4006	ECEA1HKA4R7	E. CAPACITOR 50V 4. 7U	1	
C4007	ECUM1H822KBN	C. CAPACITOR CH 50V 8200P	1	
C4008	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C4009	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C4010	ECEA0JKA470	E. CAPACITOR 6. 3V 47U	1	
C4011	ECEA0JKA220	E. CAPACITOR 6. 3V 22U	1	
C4012	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C4013	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C4015	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C4016	ECKF1H102KB	C. CAPACITOR 50V 1000P	1	
C4018	ECUM1E223KBN	C. CAPACITOR CH 25V 0. 022U	1	
C4019	ECUM1H822KBN	C. CAPACITOR CH 50V 8200P	1	
C4020	ECEA0JKA221	E. CAPACITOR 6. 3V 220U	1	
C4021	ECQB1H223JF	P. CAPACITOR 50V 0. 022U	1	
C4023	ECUM1H152KBN	C. CAPACITOR CH 50V 1500P	1	
C4028	ECEA0JKA470	E. CAPACITOR 6. 3V 47U	1	
C6001	ECUM1H103KBN	C. CAPACITOR CH 50V 0. 01U	1	
C6003	ECEA0JKA470	E. CAPACITOR 6. 3V 47U	1	
C6004	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C6005, 06	ECUM1H150JCN	C. CAPACITOR CH 50V 15P	2	
C6007	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
C6009	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C6012	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C6016	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C6017-19	ECUM1H221JCN	C. CAPACITOR CH 50V 220P	3	
C6020	ECUM1C474KBM	C. CAPACITOR CH 16V 0. 47U	1	
C6021	ECUM1E683KBN	C. CAPACITOR CH 25V 0. 068U	1	
C6022	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C6026-28	ECUM1H221JCN	C. CAPACITOR CH 50V 220P	3	
C6029	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
C6031	ECUM1H330JCN	C. CAPACITOR CH 50V 33P	1	
C6032	ECEA1HKA3R3	E. CAPACITOR 50V 3. 3U	1	
C7003	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C7005	ECEA1HKA100	E. CAPACITOR 50V 10U	1	
C7603	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C7604	ECEA0JKA101	E. CAPACITOR 6. 3V 100U	1	
C7605	ECEA1CKA101	E. CAPACITOR 16V 100U	1	
C7606	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C7607	ECEA1HKA100	E. CAPACITOR 50V 10U	1	
C7608	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C7609	ECEA0JKA101	E. CAPACITOR 6. 3V 100U	1	
C7614	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C7701	ECUM1H470JCN	C. CAPACITOR CH 50V 47P	1	
C7703	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	1	
C7705	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C7706	ECUM1H300JCN	C. CAPACITOR CH 50V 30P	1	
C7707	ECUM1H100DCN	C. CAPACITOR CH 50V 10P	1	
C7709	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C7711	ECUM1H222KBN	C. CAPACITOR CH 50V 2200P	1	
C7712	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C7713	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	1	
C7714	ECUM1H180JCN	C. CAPACITOR CH 50V 18P	1	
C7715-17	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	3	
D1001	MA4051-L	DIODE	1	
D1002	MA4120-M	DIODE	1	
D1003	1SS254	DIODE	1	
D1005	1SS254	DIODE	1	
D1006	MA4051-M	DIODE	1	
D1007	1SS254	DIODE	1	
D1008, 09	11ES1	DIODE	2	
D1011-16	11ES1	DIODE	6	
D2501	MA151WK	DIODE	1	
D2503	MA151WK	DIODE	1	
D2505, 06	1SS254	DIODE	2	
D2508	1SS254	DIODE	1	
D3001	1SS283	DIODE	1	
D3003	1SS254	DIODE	1	
D3006	1SS254	DIODE	1	
D4004	1SS254	DIODE	1	
D6001	SIR505S	DIODE	1	
D6002	MA723-VT	DIODE	1	
D6003, 04	1SS254	DIODE	2	
D7001	MA4220	DIODE	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
D7016	1SS254	DIODE	1	
D7023-25	1SS254	DIODE	3	
D7029-32	1SS254	DIODE	4	
D7601	MA4300-M	DIODE	1	
D7701	SVC251SPA	DIODE	1	
DP7001	VSL0479	FIP	1	
⚠ DU7601	ENG57532G	TUNER	1	
IC1001	UPC1093J	IC	1	
IC2502	AN3814K	IC	1	
IC3001	AN3501FBP	IC	1	
IC3003	TL8849AP	IC	1	
IC6001	MN675547VRWB	IC	1	[SUPPLIED FROM MAV]
IC6003	PST7043	IC	1	
IC6004	PNA4611M00LC	IC	1	
IC6005, 06	RPI354N	IC	2	
IC6007	S-29255ADP	IC	1	[SUPPLIED FROM MAV]
IC7001	M34240V1BQ	IC	1	
IC7701	UPD6464WVAJ	IC	1	
⚠ IP1001	UNH000300A	IC PROTECTOR	1	
JK3001	VJJ0391	4-PIN JACK	1	
K3001	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K3011	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K3014-16	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	3	
K4001	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K4004	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K6002	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K6004, 05	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	2	
K6012, 13	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	2	
K7601	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K7603	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K7605	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K7610	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
L3001	VLQ0599J680	COIL 68UH	1	
L3002	ELESE120JA	COIL 12UH	1	
L3003	ELESE220JA	COIL 22UH	1	
L3004	VLQ0599J680	COIL 68UH	1	
L3006	ELESN820JA	COIL 82UH	1	
L3007	VLQ0599J151	COIL 150UH	1	
L3012	VLQ0599J680	COIL 68UH	1	
L3014-16	VLQ0599J680	COIL 68UH	3	
L3018	ELESE151KA	COIL 150UH	1	
L4001	VLQEL07F153J	COIL 15000UH	1	
L4003	ELESN471KA	INDUCTOR 470UH	1	
L7601	VLQ0599J1R0	COIL 1UH	1	
L7602	VLQ0599J680	COIL 68UH	1	
L7605, 06	VLQ0599J680	COIL 68UH	2	
L7607	VLQ0599J1R0	COIL 1UH	1	
L7701	VLQ0599J100	COIL 10UH	1	
L7703	VLQ0599J330	COIL 33UH	1	
L7704	VLQ0599J4R7	COIL 4. 7UH	1	
LB3005	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
LB3010, 11	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	2	
LB3013	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
LB3017-22	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	6	
LB6001, 02	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	2	
P1001	VJS3917A016W	CONNECTOR (FEMALE) 16P	1	
P2001	VJP3835A012	CONNECTOR (MALE) 12P	1	
P2502	VJS3537A009G	CONNECTOR (FEMALE) 9P	1	
P3001	VJS3537A006G	CONNECTOR (FEMALE) 6P	1	
P4001	VJS3537A006G	CONNECTOR (FEMALE) 6P	1	
P4002	VJS3837A002	CONNECTOR (FEMALE) 2P	1	
P6003	VJS3837A002	CONNECTOR (FEMALE) 2P	1	
Q1001	MSD1328	TRANSISTOR	1	
Q1002	2SD25440PQA	TRANSISTOR	1	
Q1003	2SD1996	TRANSISTOR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
Q1004	2SD25440PQA	TRANSISTOR	1	
Q1006	2SC3311	TRANSISTOR	1	
Q1007	2SB1073	TRANSISTOR	1	
Q1008	2SD1996	TRANSISTOR	1	
Q1009	MSD1328	TRANSISTOR	1	
Q3001	2SB709A	TRANSISTOR	1	
Q3002	2SD601A	TRANSISTOR	1	
Q3007	MSB710	TRANSISTOR	1	
Q3008	MSC2295	TRANSISTOR	1	
Q4001	MSD601	TRANSISTOR	1	
Q4002	MSD602	TRANSISTOR	1	
Q4003	MSB710	TRANSISTOR	1	
Q4005	2SD1149	TRANSISTOR	1	
Q4006	2SD601A	TRANSISTOR	1	
Q6002	PNB2301MAV	TRANSISTOR	1	
Q6003	PNB2301MBV	TRANSISTOR	1	
QR1001	MUN2211	TRANSISTOR-RESISTOR	1	
QR3002	MUN2212	TRANSISTOR-RESISTOR	1	
QR3004	MUN2212	TRANSISTOR-RESISTOR	1	
QR3009	MUN2213	TRANSISTOR-RESISTOR	1	
QR3011	MUN2212	TRANSISTOR-RESISTOR	1	
QR3016, 17	MUN2213	TRANSISTOR-RESISTOR	2	
QR4001	MUN2212	TRANSISTOR-RESISTOR	1	
QR4002	MUN2211	TRANSISTOR-RESISTOR	1	
QR4003	MUN2213	TRANSISTOR-RESISTOR	1	
QR4004	MUN2111	TRANSISTOR-RESISTOR	1	
QR7005	MUN2112	TRANSISTOR-RESISTOR	1	
QR7601	MUN2213	TRANSISTOR-RESISTOR	1	
QR7701	MUN2113	TRANSISTOR-RESISTOR	1	
QR7702	MUN2211	TRANSISTOR-RESISTOR	1	
R1001	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
R1002	ERJ6GMYG122	M.RESISTOR CH 1/10W 1.2K	1	
R1003	ERDS2TJ222	C.RESISTOR 1/4W 2.2K	1	
R1004	ERDS2TJ182	C.RESISTOR 1/4W 1.8K	1	
R1005	ERDS2TJ222	C.RESISTOR 1/4W 2.2K	1	
R1006	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R1007, 08	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	2	
R1009	ERDS2TJ182	C.RESISTOR 1/4W 1.8K	1	
R1010	ERJ6RBD123	M.RESISTOR CH 1/10W 12K	1	
R1011	ERJ6RBD333	M.RESISTOR CH 1/10W 33K	1	
R1012	ERJ6RBD272	M.RESISTOR CH 1/10W 2.7K	1	
R1016	ERJ6GMYG152	M.RESISTOR CH 1/10W 1.5K	1	
R2002	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R2003	ERJ6GMYJ684	M.RESISTOR CH 1/10W 680K	1	
R2009	ERJ6GMYG222	M.RESISTOR CH 1/10W 2.2K	1	
R2013	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R2014	ERJ6GMYG392	M.RESISTOR CH 1/10W 3.9K	1	
R2501	ERDS2TJ330	C.RESISTOR 1/4W 33	1	
R2503	ERDS2TJ391	C.RESISTOR 1/4W 390	1	
R2504	ERDS2FJ1R5	C.RESISTOR 1/4W 1.5	1	
R2505	ERDS2FJ1R2	C.RESISTOR 1/4W 1.2	1	
R2506, 07	ERDS2TJ330	C.RESISTOR 1/4W 33	2	
R2508	ERDS2TJ2R2	C.RESISTOR 1/4W 2.2	1	
R2510	ERJ6GMZOR00	M.RESISTOR CH 1/10W 0	1	
R3001	ERJ6GMYG681	M.RESISTOR CH 1/10W 680	1	
R3002, 03	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	2	
R3004	ERJ6GMYG821	M.RESISTOR CH 1/10W 820	1	
R3005	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R3006	ERJ6GMYG101	M.RESISTOR CH 1/10W 100	1	
R3007	ERJ6GMYG221	M.RESISTOR CH 1/10W 220	1	
R3008	ERJ6GMYG301	M.RESISTOR CH 1/10W 300	1	
R3011	ERJ6GMYJ125	M.RESISTOR CH 1/10W 1.2M	1	
R3012, 13	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	2	
R3014	ERJ6GMYG222	M.RESISTOR CH 1/10W 2.2K	1	
R3015	ERJ6GMYG681	M.RESISTOR CH 1/10W 680	1	
R3016	ERJ6GMYG221	M.RESISTOR CH 1/10W 220	1	
R3017	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R3018	ERJ6GMYJ684	M.RESISTOR CH 1/10W 680K	1	
R3019	ERJ6GMYG750	M.RESISTOR CH 1/10W 75	1	
R3020	ERJ6GMYG471	M.RESISTOR CH 1/10W 470	1	
R3021	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
R3022	ERJ6GMYG750	M.RESISTOR CH 1/10W 75	1	
R3025	ERJ6GMYG301	M.RESISTOR CH 1/10W 300	1	
R3026	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R3027	ERJ6GMYG152	M.RESISTOR CH 1/10W 1.5K	1	
R3028	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R3029	ERJ6GMZOR00	M.RESISTOR CH 1/10W 0	1	
R3030	ERJ6GMYG563	M.RESISTOR CH 1/10W 56K	1	
R3032	ERJ6GMYG154	M.RESISTOR CH 1/10W 150K	1	
R3034	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R3036	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R3037	ERJ6GMYG821	M.RESISTOR CH 1/10W 820	1	
R3040	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R3041	ERJ6GMYG182	M.RESISTOR CH 1/10W 1.8K	1	
R3042	ERJ6GMYG472	M.RESISTOR CH 1/10W 4.7K	1	
R3044	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R3045	ERJ6GMYJ684	M.RESISTOR CH 1/10W 680K	1	
R3049, 50	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	2	
R3051	ERJ6GMYJ124	M.RESISTOR CH 1/10W 120K	1	
R3052	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R3053	ERJ6GMYG183	M.RESISTOR CH 1/10W 18K	1	
R3054	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R3055	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
R3057	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R3059	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R3060	ERJ6GMYG122	M.RESISTOR CH 1/10W 1.2K	1	
R3061	ERJ6GMYG152	M.RESISTOR CH 1/10W 1.5K	1	
R3062	ERJ6GMYJ221	M.RESISTOR CH 1/10W 220	1	
R3071	ERJ6GMYG224	M.RESISTOR CH 1/10W 220K	1	
R3077	ERJ6GMYG472	M.RESISTOR CH 1/10W 4.7K	1	
R3090	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R4001	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R4002	ERJ6GMYJ241	M.RESISTOR CH 1/10W 240	1	
R4003	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R4004	ERJ6GMYG334	M.RESISTOR CH 1/10W 330K	1	
R4005	ERJ6GMYJ163	M.RESISTOR CH 1/10W 16K	1	
R4006	ERJ6GMYG331	M.RESISTOR CH 1/10W 330	1	
R4007	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R4008	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R4009	ERJ6GMYJ225	M.RESISTOR CH 1/10W 2.2M	1	
R4010	ERJ6GMYG333	M.RESISTOR CH 1/10W 33K	1	
R4011	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R4012	ERJ6GMYG471	M.RESISTOR CH 1/10W 470	1	
R4013	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R4014	ERJ6GMYG472	M.RESISTOR CH 1/10W 4.7K	1	
R4015	ERJ6GMYG222	M.RESISTOR CH 1/10W 2.2K	1	
R4016	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R4019	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R4020	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R4021	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R4022	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R4023, 24	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	2	
R4025	ERJ6GMYG222	M.RESISTOR CH 1/10W 2.2K	1	
R4030	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R6001	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R6002	ERJ6GMZOR00	M.RESISTOR CH 1/10W 0	1	
R6003	ERJ6GMYG101	M.RESISTOR CH 1/10W 100	1	
R6004	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R6005	ERJ6GMYG273	M.RESISTOR CH 1/10W 27K	1	
R6006	ERDS2TJ470	C.RESISTOR 1/4W 47	1	
R6007	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R6011	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R6012	ERDS2TJ121	C.RESISTOR 1/4W 120	1	
R6016	ERJ6GMYG393	M.RESISTOR CH 1/10W 39K	1	
R6017	ERJ6GMYG273	M.RESISTOR CH 1/10W 27K	1	
R6021	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R6022	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R6023	ERJ6GMZOR00	M.RESISTOR CH 1/10W 0	1	
R6028	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R6029	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R6031	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R6032-37	ERJ6GMYJ221	M.RESISTOR CH 1/10W 220	6	
R6038-40	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	3	
R6041	ERJ6GMYG272	M.RESISTOR CH 1/10W 2.7K	1	
R6042-44	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	3	
R6045	ERJ6GMYG101	M.RESISTOR CH 1/10W 100	1	
R6046	ERJ6GMZOR00	M.RESISTOR CH 1/10W 0	1	
R6047	ERJ6GMYG101	M.RESISTOR CH 1/10W 100	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R6049-51	ERJ6GMYG101	M.RESISTOR CH 1/10W 100	3	
R6052-54	ERJ6GMYG333	M.RESISTOR CH 1/10W 33K	3	
R6055	ERJ6GMYJ221	M.RESISTOR CH 1/10W 220	1	
R6057	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R6058	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	1	
R6059	ERJ6GMYG273	M.RESISTOR CH 1/10W 27K	1	
R6060	ERDS2TJ181	C.RESISTOR 1/4W 180	1	
R6061	ERJ6GMYG273	M.RESISTOR CH 1/10W 27K	1	
R6062	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R6066	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	1	
R6067-69	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	3	
R6070-72	ERJ6GMYJ221	M.RESISTOR CH 1/10W 220	3	
R6073	ERJ6GMYJ105	M.RESISTOR CH 1/10W 1M	1	
R6074	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	1	
R6085	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	1	
R6086	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R6091	ERJ6GMYJ221	M.RESISTOR CH 1/10W 220	1	
R6093	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R6095	ERJ6GMYJ221	M.RESISTOR CH 1/10W 220	1	
R7001	ERDS2TJ6R8	C.RESISTOR 1/4W 6.8	1	
R7002-05	ERJ6GMYG333	M.RESISTOR CH 1/10W 33K	4	
R7006	ERJ6GMYJ105	M.RESISTOR CH 1/10W 1M	1	
R7007	ERJ6GMYG101	M.RESISTOR CH 1/10W 100	1	
R7008-11	ERJ6GMYG563	M.RESISTOR CH 1/10W 56K	4	
R7012,13	ERJ6GMYG132	M.RESISTOR CH 1/10W 1.3K	2	
R7014	ERJ6GMYG104	M.RESISTOR CH 1/10W 100K	1	
R7601,02	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	2	
R7605	ERG2SJ331	M.RESISTOR 2W 330	1	
R7606,07	ERJ6GMYG151	M.RESISTOR CH 1/10W 150	2	
R7608,09	ERJ6GMYJ683	M.RESISTOR CH 1/10W 68K	2	
R7610	ERG2SJ331	M.RESISTOR 2W 330	1	
R7702	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	1	
R7703	ERJ6GMYG104	M.RESISTOR CH 1/10W 100K	1	
R7704	ERJ6GMYG512	M.RESISTOR CH 1/10W 5.1K	1	
R7705	ERJ6GMYG152	M.RESISTOR CH 1/10W 1.5K	1	
S3001	VSS0531	AV SELECT SWITCH	1	
S6001	VES0834	S-TAB SWITCH	1	
S6002	VSS0520	MODE SELECT SWITCH	1	
S7001,02	EVQ11L07B	SWITCH	2	
S7004-06	EVQ11L07B	SWITCH	3	
S7009	EVQ11L07B	SWITCH	1	
S7601	VSS0530	AV SELECT SWITCH	1	
S7602	VSS0531	AV SELECT SWITCH	1	
T4002	EQQ7QF024Q	TRANSFORMER	1	
W504-06	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	3	
W508	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	1	
W511	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	1	
W513	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	1	
W515,16	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	2	
W521,22	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	2	
W528	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	1	
W531-35	ERJ6GMZOROO	M.RESISTOR CH 1/10W 0	5	
X3001	VSX0162	CRYSTAL OSCILLATOR	1	
X3002	VSX0160	CRYSTAL OSCILLATOR	1	
X6001	VSX0830	CRYSTAL OSCILLATOR	1	
X7001	VSX0661	CRYSTAL OSCILLATOR	1	
ZB7001	VXQ0571	FIP HOLDER UNIT	1	
■	VEP06B52H	MAIN C.B.A.		[SUPPLIED FROM MAV]
				(RTL)
				NV-SD220AM/AMJ
C1001	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C1002	ECEA0JKA220	E.CAPACITOR 6.3V 22U	1	
C1003	ECEA1CU101	E.CAPACITOR 16V 100U	1	
C1004	ECEA0JKA101	E.CAPACITOR 6.3V 100U	1	
C1005	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C1006	ECEA1CU470	E.CAPACITOR 16V 47U	1	
C1007	ECEA1CU101	E.CAPACITOR 16V 100U	1	
C1008	ECUMJC334ZFN	C.CAPACITOR CH 16V 0.33U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C1009	ECEA1CKA100	E.CAPACITOR 16V 10U	1	
C1010	ECEA0JKA101	E.CAPACITOR 6.3V 100U	1	
C1011	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C1012	ECEA0JKA220	E.CAPACITOR 6.3V 22U	1	
C2009	ECUM1E683KBN	C.CAPACITOR CH 25V 0.068U	1	
C2010	ECUM1H392KBN	C.CAPACITOR CH 50V 3900P	1	
C2012	ECEA1CKN100	E.CAPACITOR 16V 10U	1	
C2013	ECUM1H222KBN	C.CAPACITOR CH 50V 2200P	1	
C2014	ECEA0JKA221	E.CAPACITOR 6.3V 220U	1	
C2015	ECEA1HKA4R7	E.CAPACITOR 50V 4.7U	1	
C2017	ECUM1C474ZFN	C.CAPACITOR CH 16V 0.47U	1	
C2018	ECUM1H472KBN	C.CAPACITOR CH 50V 4700P	1	
C2021	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	1	
C2502	ECEA1VKN4R7	E.CAPACITOR 35V 4.7U	1	
C2503	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C2504-06	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	3	
C2507	ECQV1H683B46	P.CAPACITOR 50V 0.068U	1	
C2508	ECEA0JKA221	E.CAPACITOR 6.3V 220U	1	
C2509	ECEA1EKA470	E.CAPACITOR 25V 47U	1	
C2512	ECUM1H473ZFN	C.CAPACITOR CH 50V 0.047U	1	
C2513	ECEA0JKA101	E.CAPACITOR 6.3V 100U	1	
C2514,15	ECEA1VKN4R7	E.CAPACITOR 35V 4.7U	2	
C3001	ECUX1H561JCN	C.CAPACITOR CH 50V 560P	1	
C3002	ECUM1H390JCN	C.CAPACITOR CH 50V 39P	1	
C3003	ECUM1H151JCN	C.CAPACITOR CH 50V 150P	1	
C3004	ECUM1H330JCN	C.CAPACITOR CH 50V 33P	1	
C3005	ECUM1H180JCN	C.CAPACITOR CH 50V 18P	1	
C3006	ECUM1H820JCN	C.CAPACITOR CH 50V 82P	1	
C3007	ECUM1H680JCN	C.CAPACITOR CH 50V 68P	1	
C3008	ECUM1H100DCN	C.CAPACITOR CH 50V 10P	1	
C3009	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C3010	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3011	ECEA0JKA101	E.CAPACITOR 6.3V 100U	1	
C3012	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C3013	ECEA1HKA4R7	E.CAPACITOR 50V 4.7U	1	
C3014	ECUM1H102KBN	C.CAPACITOR CH 50V 1000P	1	
C3017,18	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	2	
C3019	ECEA0JKA220	E.CAPACITOR 6.3V 22U	1	
C3020	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C3021	ECUM1C474KBM	C.CAPACITOR CH 16V 0.47U	1	
C3022	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	1	
C3023	ECEA1CKA100	E.CAPACITOR 16V 10U	1	
C3024	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3025	ECUM1C105ZFM	C.CAPACITOR CH 16V 1U	1	
C3026	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	1	
C3027	ECUM1C474KBM	C.CAPACITOR CH 16V 0.47U	1	
C3028	ECEA1CKA100	E.CAPACITOR 16V 10U	1	
C3029	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1	
C3030	ECUM1H680JCN	C.CAPACITOR CH 50V 68P	1	
C3031	ECUM1H181JCN	C.CAPACITOR CH 50V 180P	1	
C3032	ECUM1H100DCN	C.CAPACITOR CH 50V 10P	1	
C3033	ECUM1H821JCN	C.CAPACITOR CH 50V 820P	1	
C3034	ECUM1H221JCN	C.CAPACITOR CH 50V 220P	1	
C3035	ECUM1H100DCN	C.CAPACITOR CH 50V 10P	1	
C3036	ECUM1H151JCN	C.CAPACITOR CH 50V 150P	1	
C3037	ECA0JM471	E.CAPACITOR 6.3V 470U	1	
C3038	ECEA1CKA470	E.CAPACITOR 16V 47U	1	
C3039	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C3040,41	ECUM1C105KBM	C.CAPACITOR CH 16V 1U	2	
C3042,43	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	2	
C3044	ECUM1C474ZFM	C.CAPACITOR CH 16V 0.47U	1	
C3045	ECEA0JKA470	E.CAPACITOR 6.3V 47U	1	
C3047	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	1	
C3048	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3049-51	ECUM1E104KBN	C.CAPACITOR CH 25V 0.1U	3	
C3052	ECUM1C334KBN	C.CAPACITOR CH 16V 0.33U	1	
C3053	ECUM1H223KBN	C.CAPACITOR CH 50V 0.022U	1	
C3054	ECEA0JKA220	E.CAPACITOR 6.3V 22U	1	
C3055	ECEA1HKA2R2	E.CAPACITOR 50V 2.2U	1	
C3056	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3057	ECEA0JKA221	E.CAPACITOR 6.3V 220U	1	
C3058	ECUM1E223KBN	C.CAPACITOR CH 25V 0.022U	1	
C3059,60	ECUM1H103ZFN	C.CAPACITOR CH 50V 0.01U	2	
C3063	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	1	
C3064	ECEA0JKA221	E.CAPACITOR 6.3V 220U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C3065	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C3066	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C3067	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3068	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C3069	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3070	ECUM1C334KBN	C. CAPACITOR CH 16V 0. 33U	1	
C3071	ECUM1H103KBN	C. CAPACITOR CH 50V 0. 01U	1	
C3072	ECUM1H472KBN	C. CAPACITOR CH 50V 4700P	1	
C3073	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3076	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C3080	ECUM1H221JCN	C. CAPACITOR CH 50V 220P	1	
C3081	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	1	
C3089, 90	ECEA0JKA330	E. CAPACOTOR 6. 3V 33U	2	
C3092	ECEA1HKA2R2	E. CAPACITOR 50V 2. 2U	1	
C3094	ECUM1H471JCN	C. CAPACITOR CH 50V 470P	1	
C4001	ECUM1H182JCN	C. CAPACITOR CH 50V 1800P	1	
C4002	ECEA0JKA220	E. CAPACITOR 6. 3V 22U	1	
C4003	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C4004	ECUM1H822KBN	C. CAPACITOR CH 50V 8200P	1	
C4005	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C4006	ECEA1HKA4R7	E. CAPACITOR 50V 4. 7U	1	
C4007	ECUM1H822KBN	C. CAPACITOR CH 50V 8200P	1	
C4008	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C4009	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C4010	ECEA0JKA470	E. CAPACITOR 6. 3V 47U	1	
C4011	ECEA0JKA220	E. CAPACITOR 6. 3V 22U	1	
C4012	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C4013	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C4015	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C4016	ECKF1H102KB	C. CAPACITOR 50V 1000P	1	
C4018	ECUM1E223KBN	C. CAPACITOR CH 25V 0. 022U	1	
C4019	ECUM1H822KBN	C. CAPACITOR CH 50V 8200P	1	
C4020	ECEA0JKA221	E. CAPACITOR 6. 3V 220U	1	
C4021	ECQB1H223JF	P. CAPACITOR 50V 0. 022U	1	
C4023	ECUM1H152KBN	C. CAPACITOR CH 50V 1500P	1	
C4028	ECEA0JKA470	E. CAPACITOR 6. 3V 47U	1	
C6001	ECUM1H103KBN	C. CAPACITOR CH 50V 0. 01U	1	
C6003	ECEA0JKA470	E. CAPACITOR 6. 3V 47U	1	
C6004	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C6005, 06	ECUM1H150JCN	C. CAPACITOR CH 50V 15P	2	
C6007	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
C6009	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C6012	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C6016	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C6017-19	ECUM1H221JCN	C. CAPACITOR CH 50V 220P	3	
C6020	ECUM1C474KBM	C. CAPACITOR CH 16V 0. 47U	1	
C6021	ECUM1E683KBN	C. CAPACITOR CH 25V 0. 068U	1	
C6022	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C6026-28	ECUM1H221JCN	C. CAPACITOR CH 50V 220P	3	
C6029	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
C6031	ECUM1H330JCN	C. CAPACITOR CH 50V 33P	1	
C6032	ECEA1HKA3R3	E. CAPACITOR 50V 3. 3U	1	
C7003	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C7005	ECEA1HKA100	E. CAPACITOR 50V 10U	1	
C7603	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C7604	ECEA0JKA101	E. CAPACITOR 6. 3V 100U	1	
C7605	ECEA1CKA101	E. CAPACITOR 16V 100U	1	
C7606	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C7607	ECEA1HKA100	E. CAPACITOR 50V 10U	1	
C7608	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C7609	ECEA0JKA101	E. CAPACITOR 6. 3V 100U	1	
C7614	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C7701	ECUM1H470JCN	C. CAPACITOR CH 50V 47P	1	
C7703	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	1	
C7705	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C7706	ECUM1H300JCN	C. CAPACITOR CH 50V 30P	1	
C7707	ECUM1H100DCN	C. CAPACITOR CH 50V 10P	1	
C7709	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C7711	ECUM1H222KBN	C. CAPACITOR CH 50V 2200P	1	
C7712	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C7713	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	1	
C7714	ECUM1H180JCN	C. CAPACITOR CH 50V 18P	1	
C7715-17	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	3	
D1001	MA4051-L	DIODE	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
D1002	MA4120-M	DIODE	1	
D1003	1SS254	DIODE	1	
D1005	1SS254	DIODE	1	
D1006	MA4051-M	DIODE	1	
D1007	1SS254	DIODE	1	
D1008, 09	11ES1	DIODE	2	
D1011-16	11ES1	DIODE	6	
D2501	MA151WK	DIODE	1	
D2503	MA151WK	DIODE	1	
D2505, 06	1SS254	DIODE	2	
D2508	1SS254	DIODE	1	
D3001	1SS283	DIODE	1	
D3003	1SS254	DIODE	1	
D3006	1SS254	DIODE	1	
D4004	1SS254	DIODE	1	
D6001	SIR505S	DIODE	1	
D6002	MA723-VT	DIODE	1	
D6003, 04	1SS254	DIODE	2	
D7001	MA4220	DIODE	1	
D7008	1SS254	DIODE	1	
D7023-25	1SS254	DIODE	3	
D7029-32	1SS254	DIODE	4	
D7601	MA4300-M	DIODE	1	
D7701	SVC251SPA	DIODE	1	
DP7001	VSL0479	FIP	1	
⚠ DU7601	ENG57540G	TUNER	1	
IC1001	UPC1093J	IC	1	
IC2502	AN3814K	IC	1	
IC3001	AN3501FBP	IC	1	
IC3003	TL8849AP	IC	1	
IC6001	MN675547VRWB	IC	1	[SUPPLIED FROM MAV]
IC6003	PST7043	IC	1	
IC6004	PNA4611M00LC	IC	1	
IC6005, 06	RPI354N	IC	2	
IC6007	S-29255ADP	IC	1	[SUPPLIED FROM MAV]
IC7001	M34240V1BQ	IC	1	
IC7701	UPD6464WVAJ	IC	1	
⚠ IP1001	UNH000300A	IC PROTECTOR	1	
JK3001	VJJ0391	4-PIN JACK	1	
K3001	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K3011	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K3014-16	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	3	
K4001	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K4004	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K6002	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K6004, 05	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	2	
K6012, 13	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	2	
K7603	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
K7611	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
L3001	VLQ0599J680	COIL 68UH	1	
L3002	ELESE120JA	COIL 12UH	1	
L3003	ELESE220JA	COIL 22UH	1	
L3004	VLQ0599J680	COIL 68UH	1	
L3006	ELESN820JA	COIL 82UH	1	
L3007	VLQ0599J151	COIL 150UH	1	
L3012	VLQ0599J680	COIL 68UH	1	
L3014-16	VLQ0599J680	COIL 68UH	3	
L3018	ELESE151KA	COIL 150UH	1	
L4001	VLQEL07F153J	COIL 15000UH	1	
L4003	ELESN471KA	INDUCTOR 470UH	1	
L7601	VLQ0599J1R0	COIL 1UH	1	
L7602	VLQ0599J680	COIL 68UH	1	
L7605, 06	VLQ0599J680	COIL 68UH	2	
L7607	VLQ0599J1R0	COIL 1UH	1	
L7701	VLQ0599J100	COIL 10UH	1	
L7703	VLQ0599J330	COIL 33UH	1	
L7704	VLQ0599J4R7	COIL 4. 7UH	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
LB3005	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
LB3010,11	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	2	
LB3013	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
LB3017-22	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	6	
LB6001,02	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	2	
P1001	VJS3917A016W	CONNECTOR (FEMALE) 16P	1	
P2001	VJP3835A012	CONNECTOR (MALE) 12P	1	
P2502	VJS3537A009G	CONNECTOR (FEMALE) 9P	1	
P3001	VJS3537A006G	CONNECTOR (FEMALE) 6P	1	
P4001	VJS3537A006G	CONNECTOR (FEMALE) 6P	1	
P4002	VJS3837A002	CONNECTOR (FEMALE) 2P	1	
P6003	VJS3837A002	CONNECTOR (FEMALE) 2P	1	
Q1001	MSD1328	TRANSISTOR	1	
Q1002	2SD25440PQA	TRANSISTOR	1	
Q1003	2SD1996	TRANSISTOR	1	
Q1004	2SD25440PQA	TRANSISTOR	1	
Q1006	2SC3311	TRANSISTOR	1	
Q1007	2SB1073	TRANSISTOR	1	
Q1009	MSD1328	TRANSISTOR	1	
Q3001	2SB709A	TRANSISTOR	1	
Q3002	2SD601A	TRANSISTOR	1	
Q3007	MSB710	TRANSISTOR	1	
Q3008	MSC2295	TRANSISTOR	1	
Q4001	MSD601	TRANSISTOR	1	
Q4002	MSD602	TRANSISTOR	1	
Q4003	MSB710	TRANSISTOR	1	
Q4005	2SD1149	TRANSISTOR	1	
Q4006	2SD601A	TRANSISTOR	1	
Q6002	PNB2301MAV	TRANSISTOR	1	
Q6003	PNB2301MBV	TRANSISTOR	1	
Q7601	2SB709A	TRANSISTOR	1	
QR1001	MUN2211	TRANSISTOR-RESISTOR	1	
QR3002	MUN2212	TRANSISTOR-RESISTOR	1	
QR3004	MUN2212	TRANSISTOR-RESISTOR	1	
QR3009	MUN2213	TRANSISTOR-RESISTOR	1	
QR3011	MUN2212	TRANSISTOR-RESISTOR	1	
QR3016,17	MUN2213	TRANSISTOR-RESISTOR	2	
QR4001	MUN2212	TRANSISTOR-RESISTOR	1	
QR4002	MUN2211	TRANSISTOR-RESISTOR	1	
QR4003	MUN2213	TRANSISTOR-RESISTOR	1	
QR4004	MUN2111	TRANSISTOR-RESISTOR	1	
QR7601	MUN2213	TRANSISTOR-RESISTOR	1	
QR7701	MUN2113	TRANSISTOR-RESISTOR	1	
QR7702	MUN2211	TRANSISTOR-RESISTOR	1	
R1001	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
R1002	ERJ6GMYG122	M.RESISTOR CH 1/10W 1.2K	1	
R1003	ERDS2TJ222	C.RESISTOR 1/4W 2.2K	1	
R1004	ERDS2TJ182	C.RESISTOR 1/4W 1.8K	1	
R1005	ERDS2TJ222	C.RESISTOR 1/4W 2.2K	1	
R1006	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R1007,08	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	2	
R1009	ERDS2TJ182	C.RESISTOR 1/4W 1.8K	1	
R1010	ERJ6RBD123	M.RESISTOR CH 1/10W 12K	1	
R1011	ERJ6RBD333	M.RESISTOR CH 1/10W 33K	1	
R1012	ERJ6RBD272	M.RESISTOR CH 1/10W 2.7K	1	
R1016	ERJ6GMYG152	M.RESISTOR CH 1/10W 1.5K	1	
R2002	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R2003	ERJ6GMYJ684	M.RESISTOR CH 1/10W 680K	1	
R2009	ERJ6GMYG222	M.RESISTOR CH 1/10W 2.2K	1	
R2013	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R2014	ERJ6GMYG392	M.RESISTOR CH 1/10W 3.9K	1	
R2501	ERDS2TJ330	C.RESISTOR 1/4W 33	1	
R2503	ERDS2TJ391	C.RESISTOR 1/4W 390	1	
R2504	ERDS2FJ1R5	C.RESISTOR 1/4W 1.5	1	
R2505	ERDS2FJ1R2	C.RESISTOR 1/4W 1.2	1	
R2506,07	ERDS2TJ330	C.RESISTOR 1/4W 33	2	
R2508	ERDS2TJ2R2	C.RESISTOR 1/4W 2.2	1	
R2510	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
R3001	ERJ6GMYG681	M.RESISTOR CH 1/10W 680	1	
R3002,03	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	2	
R3004	ERJ6GMYG821	M.RESISTOR CH 1/10W 820	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R3005	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R3006	ERJ6GMYG101	M.RESISTOR CH 1/10W 100	1	
R3007	ERJ6GMYG221	M.RESISTOR CH 1/10W 220	1	
R3008	ERJ6GMYG301	M.RESISTOR CH 1/10W 300	1	
R3011	ERJ6GMYJ125	M.RESISTOR CH 1/10W 1.2M	1	
R3012,13	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	2	
R3014	ERJ6GMYG222	M.RESISTOR CH 1/10W 2.2K	1	
R3015	ERJ6GMYG681	M.RESISTOR CH 1/10W 680	1	
R3016	ERJ6GMYG221	M.RESISTOR CH 1/10W 220	1	
R3017	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R3018	ERJ6GMYJ684	M.RESISTOR CH 1/10W 680K	1	
R3019	ERJ6GMYG750	M.RESISTOR CH 1/10W 75	1	
R3020	ERJ6GMYG471	M.RESISTOR CH 1/10W 470	1	
R3021	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
R3022	ERJ6GMYG750	M.RESISTOR CH 1/10W 75	1	
R3025	ERJ6GMYG301	M.RESISTOR CH 1/10W 300	1	
R3026	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R3027	ERJ6GMYG152	M.RESISTOR CH 1/10W 1.5K	1	
R3028	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R3029	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
R3030	ERJ6GMYG563	M.RESISTOR CH 1/10W 56K	1	
R3032	ERJ6GMYG154	M.RESISTOR CH 1/10W 150K	1	
R3034	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R3036	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R3037	ERJ6GMYG821	M.RESISTOR CH 1/10W 820	1	
R3040	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R3041	ERJ6GMYG182	M.RESISTOR CH 1/10W 1.8K	1	
R3042	ERJ6GMYG472	M.RESISTOR CH 1/10W 4.7K	1	
R3044	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R3045	ERJ6GMYJ684	M.RESISTOR CH 1/10W 680K	1	
R3049,50	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	2	
R3051	ERJ6GMYJ124	M.RESISTOR CH 1/10W 120K	1	
R3052	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R3053	ERJ6GMYG183	M.RESISTOR CH 1/10W 18K	1	
R3054	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R3055	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
R3057	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R3059	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R3060	ERJ6GMYG122	M.RESISTOR CH 1/10W 1.2K	1	
R3061	ERJ6GMYG152	M.RESISTOR CH 1/10W 1.5K	1	
R3062	ERJ6GMYJ221	M.RESISTOR CH 1/10W 220	1	
R3071	ERJ6GMYG224	M.RESISTOR CH 1/10W 220K	1	
R3077	ERJ6GMYG472	M.RESISTOR CH 1/10W 4.7K	1	
R3090	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R4001	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R4002	ERJ6GMYJ241	M.RESISTOR CH 1/10W 240	1	
R4003	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R4004	ERJ6GMYG334	M.RESISTOR CH 1/10W 330K	1	
R4005	ERJ6GMYJ163	M.RESISTOR CH 1/10W 16K	1	
R4006	ERJ6GMYG331	M.RESISTOR CH 1/10W 330	1	
R4007	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R4008	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R4009	ERJ6GMYJ225	M.RESISTOR CH 1/10W 2.2M	1	
R4010	ERJ6GMYG333	M.RESISTOR CH 1/10W 33K	1	
R4011	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R4012	ERJ6GMYG471	M.RESISTOR CH 1/10W 470	1	
R4013	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R4014	ERJ6GMYG472	M.RESISTOR CH 1/10W 4.7K	1	
R4015	ERJ6GMYG222	M.RESISTOR CH 1/10W 2.2K	1	
R4016	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R4019	ERJ6GMYG473	M.RESISTOR CH 1/10W 47K	1	
R4020	ERJ6GMYJ223	M.RESISTOR CH 1/10W 22K	1	
R4021	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	1	
R4022	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R4023,24	ERJ6GMYG332	M.RESISTOR CH 1/10W 3.3K	2	
R4025	ERJ6GMYG222	M.RESISTOR CH 1/10W 2.2K	1	
R4030	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R6001	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R6002	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
R6003	ERJ6GMYG101	M.RESISTOR CH 1/10W 100	1	
R6004	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	
R6005	ERJ6GMYG273	M.RESISTOR CH 1/10W 27K	1	
R6006	ERDS2TJ470	C.RESISTOR 1/4W 47	1	
R6007	ERJ6GMYG102	M.RESISTOR CH 1/10W 1K	1	
R6011	ERJ6GMYG103	M.RESISTOR CH 1/10W 10K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R6012	ERDS2TJ121	C. RESISTOR 1/4W 120	1	
R6016	ERJ6GMYG393	M. RESISTOR CH 1/10W 39K	1	
R6017	ERJ6GMYG273	M. RESISTOR CH 1/10W 27K	1	
R6021	ERJ6GMYJ223	M. RESISTOR CH 1/10W 22K	1	
R6022	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R6023	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
R6028	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R6029	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R6031	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R6032-37	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	6	
R6038-40	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	3	
R6041	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R6042-44	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	3	
R6045	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R6046	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
R6047	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R6049-51	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	3	
R6052-54	ERJ6GMYG333	M. RESISTOR CH 1/10W 33K	3	
R6055	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R6056	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R6057	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R6059	ERJ6GMYG273	M. RESISTOR CH 1/10W 27K	1	
R6060	ERDS2TJ181	C. RESISTOR 1/4W 180	1	
R6061	ERJ6GMYG273	M. RESISTOR CH 1/10W 27K	1	
R6062	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R6067~69	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	3	
R6070~72	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	3	
R6073	ERJ6GMYJ105	M. RESISTOR CH 1/10W 1M	1	
R6074	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
R6085	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
R6086, 87	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	2	
R6091	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R6093	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R6095	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R7001	ERDS2TJ6R8	C. RESISTOR 1/4W 6.8	1	
R7002~05	ERJ6GMYG333	M. RESISTOR CH 1/10W 33K	4	
R7006	ERJ6GMYJ105	M. RESISTOR CH 1/10W 1M	1	
R7007	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R7008~11	ERJ6GMYG563	M. RESISTOR CH 1/10W 56K	4	
R7012, 13	ERJ6GMYG132	M. RESISTOR CH 1/10W 1.3K	2	
R7014	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R7601, 02	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	2	
R7603	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R7604	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R7605	ERG2SJ331	M. RESISTOR 2W 330	1	
R7606, 07	ERJ6GMYG151	M. RESISTOR CH 1/10W 150	2	
R7608, 09	ERJ6GMYJ683	M. RESISTOR CH 1/10W 68K	2	
R7610	ERG2SJ331	M. RESISTOR 2W 330	1	
R7702	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
R7703	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R7704	ERJ6GMYG512	M. RESISTOR CH 1/10W 5.1K	1	
R7705	ERJ6GMYG152	M. RESISTOR CH 1/10W 1.5K	1	
S3001	VSS0531	AV SELECT SWITCH	1	
S6001	VES0834	S-TAB SWITCH	1	
S6002	VSS0520	MODE SELECT SWITCH	1	
S7001, 02	EVQ11L07B	SWITCH	2	
S7004-06	EVQ11L07B	SWITCH	3	
S7009	EVQ11L07B	SWITCH	1	
S7601	VSS0530	AV SELECT SWITCH	1	
T4002	EQ07QF024Q	TRANSFORMER	1	
W504-06	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	3	
W508	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
W511	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
W513	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
W515, 16	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	2	
W521, 22	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	2	
W528	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	1	
W531-35	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	5	
X3001	VSX0162	CRYSTAL OSCILLATOR	1	
X3002	VSX0160	CRYSTAL OSCILLATOR	1	
X6001	VSX0830	CRYSTAL OSCILLATOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
X7001	VSX0661	CRYSTAL OSCILLATOR	1	
ZB7001	VXQ0571	FIP HOLDER UNIT	1	
■	VEP05338B	HEAD AMP C.B.A.		[SUPPLIED FROM MAV]
				(RTL)
C501	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C503, 04	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	2	
C505	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C506	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C509, 10	ECUM1C474KBN	C. CAPACITOR CH 16V 0.47U	2	
IC501	AN3365SB	IC	1	[SUPPLIED FROM MAV]
K501, 02	ERJ6GMZ0R00	M. RESISTOR CH 1/10W 0	2	
L501	VLQ0599J680	COIL 68UH	1	
LB503, 04	VLP0321A601	COIL	2	
P501	VJS3537B006G	CONNECTOR (FEMALE) 6P	1	
P502	VJS3069T	CONNECTOR (FEMALE) 8P	1	
R504	ERJ6GMYG681	M. RESISTOR CH 1/10W 680	1	
R505	ERDS2TJ271	C. RESISTOR 1/4W 270	1	
ZA501	VSC4563	SHIELD CASE (TOP)	1	
⚠ ■	VEP01799A	SWITCH POWER C.B.A.		[SUPPLIED FROM MAV]
				(RTL) NV-SD225AM/AMJ
				NV-SD220AM/AMJ
⚠ C1101	VCK0286B331	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1102	ECQV1H104B46	P. CAPACITOR 50V 0.1U	1	
⚠ C1104	VCK0286B331	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
⚠ C1107	VCK0286E102	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1108	ECCZ3A121KGE	C. CAPACITOR 1KV 120	1	
C1109	ECKD2H103PU	C. CAPACITOR 500V 0.01U	1	
C1110	VCEA0JJC331	E. CAPACITOR 6.3V 330U	1	[SUPPLIED FROM MAV]
C1111	ECKF1H102KB	C. CAPACITOR 50V 1000P	1	
C1112	ECQB1H822JF	P. CAPACITOR 50V 8200P	1	
C1114	VCEA1VJC470	E. CAPACITOR 35V 47U	1	[SUPPLIED FROM MAV]
C1116	VCK0266K101	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
⚠ C1118	ECQU2A104MV	P. CAPACITOR 250V 0.1U	1	
⚠ C1119	ECQU2A104MN	P. CAPACITOR 250V 0.1U	1	
C1120	ECEC2GG680	E. CAPACITOR 400V 68U	1	
C1131	EEUFA1E681	E. CAPASITOR 25V 680U	1	
C1132	VCEA1CJC331	E. CAPASITOR 16V 330U	1	[SUPPLIED FROM MAV]
C1133	VCK0266K221	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1134	EEUFA1A391	E. CAPACITOR 10V 390U	1	
C1135	VCEA1AJC331	E. CAPASITOR 10V 330U	1	[SUPPLIED FROM MAV]
C1136	VCK0266K101	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1137	VCEA1HJC470	E. CAPASITOR 50V 47U	1	[SUPPLIED FROM MAV]
C1138	ECKF1H103ZF	C. CAPACITOR 50V 0.01U	1	
C1139	VCK0266K101	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1140	VCEA1VJC101	E. CAPASITOR 35V 100U	1	[SUPPLIED FROM MAV]
C1141	ECKF1H103ZF	C. CAPACITOR 50V 0.01U	1	
C1142	VCK0266K101	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1143	ECA1AFZ331	E. CAPACITOR 10V 330U	1	
C1144, 45	ECQB1H103JF	P. CAPACITOR 50V 0.01U	2	
D1102	S1WBA60S	DIODE	1	
D1103	AP01C	DIODE	1	
D1104	MA185	DIODE	1	
D1105	MA700	DIODE	1	
D1106	MA4220-H	DIODE	1	
D1107	1SS254	DIODE	1	
D1121	RN2ZLF-C4	DIODE	1	
D1122	11EQS06	DIODE	1	
D1123	ERA22-04	DIODE	1	
D1124	MA185	DIODE	1	
D1125	11EQS04	DIODE	1	
D1130	MA7300B	DIODE	1	[SUPPLIED FROM MAV]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ F1101	XBA2C16TB0	FUSE	1	
IC1101	STRM6559LF	IC	1	
IC1102	HA17431PA	IC	1	
⚠ IP1101	VSF0015A10	IC PROTECTOR	1	
⚠ L1107	VLF1349N0R5	LINE FILTER	1	[SUPPLIED FROM MAV]
⚠ L1108	ELF18D222F	COIL 2200UH	1	
L1121	VLQ0655K220	COIL 22UH	1	
L1122	VLQ0798K220	COIL	1	
L1123,24	ELESE101KA	COIL 100UH	2	
LB1101,02	VLP0056	COIL	2	
LB1105	VLP0056	COIL	1	
LB1107	VLP0056	COIL	1	
⚠ P1101	VJS3306	AC INLET	1	
P1103	VJP3917A016G	FJ CONNECTOR	1	
⚠ Q1111	MOC8104T	TRANSISTOR	1	
R1101	ERDS2TJ561	C.RESISTOR 1/4W 560	1	
R1102	ERG1SJ223	M.RESISTOR 1W 22K	1	
R1103,04	ERDS2FJ224	C.RESISTOR 1/4W 220K	2	
R1105	ERDS1TJ395	C.RESISTOR 1/2W 3.9M	1	
R1106	ERDS1TJ475	C.RESISTOR 1/2W 4.7M	1	
R1107	ERDS2FJ224	C.RESISTOR 1/4W 220K	1	
R1108	ERDS2FJ101	C.RESISTOR 1/4W 100	1	
R1109	ERDS2FJ152	C.RESISTOR 1/4W 1.5K	1	
R1110	ERDS2FJ103	C.RESISTOR 1/4W 10K	1	
R1111	ERDS2FJ431	C.RESISTOR 1/4W 430	1	[SUPPLIED FROM MAV]
R1112	ERDS2FJ331	C.RESISTOR 1/4W 330	1	
R1113	ERX1SJ1R0	M.RESISTOR 1W 1.0	1	
R1114	ERDS2FJ222	C.RESISTOR 1/4W 2.2K	1	
R1115	ERDS2FJ270	C.RESISTOR 1/4W 27	1	[SUPPLIED FROM MAV]
R1116	ERDS2TJ272	C.RESISTOR 1/4W 2.7K	1	
R1117	ERG1SJ223	M.RESISTOR 1W 22K	1	
R1119	ERDS2TJ103	C.RESISTOR 1/4W 10K	1	
R1120,21	EROS2CKG2701	M.RESISTOR 1/4W 2.7K	2	
R1122	ERC12AGM334	S.RESISTOR 1/2W 330K	1	
R1125	ERDS2TJ271	C.RESISTOR 1/4W 270	1	
S7511-15	EVQ11L07B	SWITCH	5	
⚠ T1101	VLT0894	TRANSFORMER	1	[SUPPLIED FROM MAV]
ZA1101	VSC4205	SHIELD COVER	1	
ZA1102	VMP5133	INLET ANGLE	1	
ZA1103	VHD0418	SCREW	1	
ZA1104,05	EYF52BC	FUSE HOLDER	2	
⚠ ZB1101	VMZ2378	BARRIER	1	
⚠ ■	VEP01799C	SWITCH POWER C.B.A.		[SUPPLIED FROM MAV]
				(RTL)
				NV-SD225EU
⚠ C1101	VCK0286B331	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1102	ECQV1H104B46	P.CAPACITOR 50V 0.1U	1	
⚠ C1104	VCK0286B331	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
⚠ C1107	VCK0286E102	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1108	ECCZ3A121KGE	C.CAPACITOR 1KV 120	1	
C1109	ECKD2H103PU	C.CAPACITOR 500V 0.01U	1	
C1110	VCEA0JJC331	E.CAPACITOR 6.3V 330U	1	[SUPPLIED FROM MAV]
C1111	ECKF1H102KB	C.CAPACITOR 50V 1000P	1	
C1112	ECQB1H822JF	P.CAPACITOR 50V 8200P	1	
C1114	VCEA1VJC470	E.CAPACITOR 35V 47U	1	[SUPPLIED FROM MAV]
C1116	VCK0266K101	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
⚠ C1118	ECQU2A104MV	P.CAPACITOR 250V 0.1U	1	
⚠ C1119	ECQU2A104MN	P.CAPACITOR 250V 0.1U	1	
C1120	ECEC2GG680	E.CAPACITOR 400V 68U	1	
C1131	EEUFA1E681	E.CAPASITOR 25V 680U	1	
C1132	VCEA1CJC331	E.CAPASITOR 16V 330U	1	[SUPPLIED FROM MAV]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C1133	VCK0266K221	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1134	EEUFA1A391	E.CAPACITOR 10V 390U	1	
C1135	VCEA1AJC331	E.CAPASITOR 10V 330U	1	[SUPPLIED FROM MAV]
C1136	VCK0266K101	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1137	VCEA1HJC470	E.CAPASITOR 50V 47U	1	[SUPPLIED FROM MAV]
C1138	ECKF1H103ZF	C.CAPACITOR 50V 0.01U	1	
C1139	VCK0266K101	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1140	VCEA1VJC101	E.CAPASITOR 35V 100U	1	[SUPPLIED FROM MAV]
C1141	ECKF1H103ZF	C.CAPACITOR 50V 0.01U	1	
C1142	VCK0266K101	CERAMIC CAPACITOR	1	[SUPPLIED FROM MAV]
C1143	ECA1AFZ331	E.CAPACITOR 10V 330U	1	
C1144,45	ECQB1H103JF	P.CAPACITOR 50V 0.01U	2	
D1102	S1WBA60S	DIODE	1	
D1103	AP01C	DIODE	1	
D1104	MA185	DIODE	1	
D1105	MA700	DIODE	1	
D1106	MA4220-H	DIODE	1	
D1107	1SS254	DIODE	1	
D1121	RN2ZLF-C4	DIODE	1	
D1122	11EQS06	DIODE	1	
D1123	ERA22-04	DIODE	1	
D1124	MA185	DIODE	1	
D1125	11EQS04	DIODE	1	
D1130	MA7300B	DIODE	1	[SUPPLIED FROM MAV]
⚠ F1101	XBA2C16TB0	FUSE	1	
IC1101	STRM6559LF	IC	1	
IC1102	HA17431PA	IC	1	
⚠ IP1101	VSF0015A10	IC PROTECTOR	1	
⚠ L1107	VLF1349N0R5	LINE FILTER	1	[SUPPLIED FROM MAV]
⚠ L1108	ELF18D222F	COIL 2200UH	1	
L1121	VLQ0655K220	COIL 22UH	1	
L1122	VLQ0798K220	COIL	1	
L1123,24	ELESE101KA	COIL 100UH	2	
LB1101,02	VLP0056	COIL	2	
LB1105	VLP0056	COIL	1	
LB1107	VLP0056	COIL	1	
⚠ P1101	VJS3306	AC INLET	1	
P1103	VJP3917A016G	FJ CONNECTOR	1	
⚠ Q1111	MOC8104T	TRANSISTOR	1	
R1101	ERDS2TJ561	C.RESISTOR 1/4W 560	1	
R1102	ERG1SJ223	M.RESISTOR 1W 22K	1	
R1103,04	ERDS2FJ224	C.RESISTOR 1/4W 220K	2	
R1105	ERDS1TJ395	C.RESISTOR 1/2W 3.9M	1	
R1106	ERDS1TJ475	C.RESISTOR 1/2W 4.7M	1	
R1107	ERDS2FJ224	C.RESISTOR 1/4W 220K	1	
R1108	ERDS2FJ101	C.RESISTOR 1/4W 100	1	
R1109	ERDS2FJ152	C.RESISTOR 1/4W 1.5K	1	
R1110	ERDS2FJ103	C.RESISTOR 1/4W 10K	1	
R1111	ERDS2FJ431	C.RESISTOR 1/4W 430	1	[SUPPLIED FROM MAV]
R1112	ERDS2FJ331	C.RESISTOR 1/4W 330	1	
R1113	ERX1SJ1R0	M.RESISTOR 1W 1.0	1	
R1114	ERDS2FJ222	C.RESISTOR 1/4W 2.2K	1	
R1115	ERDS2FJ270	C.RESISTOR 1/4W 27	1	[SUPPLIED FROM MAV]
R1116	ERDS2TJ272	C.RESISTOR 1/4W 2.7K	1	
R1117	ERG1SJ223	M.RESISTOR 1W 22K	1	
R1119	ERDS2TJ103	C.RESISTOR 1/4W 10K	1	
R1120,21	EROS2CKG2701	M.RESISTOR 1/4W 2.7K	2	
R1122	ERC12AGM334	S.RESISTOR 1/2W 330K	1	
R1125	ERDS2TJ271	C.RESISTOR 1/4W 270	1	
S7511-15	EVQ11L07B	SWITCH	5	
⚠ T1101	VLT0894	TRANSFORMER	1	[SUPPLIED FROM MAV]
ZA1101	VSC4205	SHIELD COVER	1	
ZA1102	VMP5133	INLET ANGLE	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
ZA1103	VHD0418	SCREW	1	
ZA1104, 05	EYF52BC	FUSE HOLDER	2	
⚠ ZB1101	VMZ2378	BARRIER	1	
⚠ ZB1102	VQL4856	CAUTION LABEL(A) FOR ED	1	
■	----------	CYLINDER STATOR C.B.A.		
		MISCELLANEOUS		
	HW-300A-CF	HALL IC	1	
	VJS3537B009G	CONNECTOR (FEMALE) 9P	1	
■	----------	CAPSTAN DRIVE C.B.A.		
C0201	ECUM1C474ZFM	C.CAPACITOR CH 16V 0.47U	1	
C0206	ECUM1E333KBN	C.CAPACITOR CH 25V 0.033U	1	
C0208-10	ECUM1H104ZFN	C.CAPACITOR CH 50V 0.1U	3	
IC0201	BA6872AFM	IC	1	[SUPPLIED FROM MAV]
P0201	VJS3835A012	CONNECTOR (FEMALE) 12P	1	[SUPPLIED FROM MAV]
R0201	ERJ6GEYG181	M.RESISTOR CH 1/10W 180	1	
R0204	VRE0196	M.RESISTOR CH 1/2W 47	1	[SUPPLIED FROM MAV]
R0207-09	HW-108A-FT	HALL IC	3	[SUPPLIED FROM MAV]
R0211	ERJ6GEYG432	M.RESISTOR CH 1/10W 4.3K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks

Order no. VRD9708023S8

Service Manual

Supplement

Video Product

Effective from : Mentioned Below

Model No. Mentioned Below

Subject : Change of Mechanism parts

Please use this service manual together with the service manual for Order No. and Model No. Mentioned Below

1.Change of Capstan unit

Effective From : Running Change

V18304

MODEL	ORDER NO.
NV-SD420PM	VRD9702M103
NV-SD420BR,HD620BR	VRD9704003C3
NV-SD420AR,HD620PM	VRD9706010C3

INTERCHANGEABILITY CODE See the I/C column on the following Part Number List

	Parts	Production		Parts	Production		Parts	Production		Parts	Production		
A	Original	Early	B	Original	Early	C	Original	Early	D	Original	Early	E	Addition
	New	Late		New	Late		New	Late		New	Late	F	Deletion
												G	Other

Parts Number List

Ref No.	Original Part No.	New Part No.	Part Name & Description	I/C	Remarks
10 (1)	VEK8099	VEK8239	CAPSTAN UNIT	A	

2.Change of INCLINED BASE (S) UNIT, IDLER ARM UNIT, TENSION ARM UNIT, PINCH ARM UNIT,ROLLER POST

Effective From : Running Change

V18004

V18108√

MODEL	ORDER NO.
NV-SD420PM	VRD9702M103
NV-SD420BR,HD620BR	VRD9704003C3
NV-SD420AR,HD620PM	VRD9706010C3

× V18004

× V18108

MODEL	ORDER NO.
× NV-SD320AM/AMJ,SD420A/EA/SA/EU	VRD9611M126
NV-SD270A/EA/SA,SD220A/SA,SD210SA	VRD9703M104
× NV-SD225AM/AMJ/EU,SD220AM/AMJ	VRD9703M105

INTERCHANGEABILITY CODE See the I/C column on the following Part Number List

	Parts	Production		Parts	Production		Parts	Production		Parts	Production		
A	Original	Early	B	Original	Early	C	Original	Early	D	Original	Early	E	Addition
	New	Late		New	Late		New	Late		New	Late	F	Deletion
												G	Other

Parts Number List

Ref No.	Original Part No.	New Part No.	Part Name & Description	I/C	Remarks
35 (1)	VXA5743	VXA6040	INCLINED BASE (S) UNIT	A	
48 (1)	VXL2678	VXL2792	IDLER ARM UNIT	A	
44 (1)	VXL2671	VXL2793	TENSION ARM UNIT	A	
46(1)	VXL2676	VXL2785	PINCH ARM UNIT	A	
38 (1)	VXP1415	VXP1840	ROLLER POST	B	*1
38 (1)	VXP1826	VXP1840	ROLLER POST	B	*2

*1 : NV-SD320AM/AMJ,SD420A/EA/SA/EU,HD620BR/PM

*2 : NV-SD420AR/BR/PM,SD270A/EA/SA,SD220A/SA/AM/AMJ,SD210SA,SD225AM/AMJ/EU

⚠ WARNING

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3. Change of Pinch Arm Unit
Effective From:Running Change
Model No.:All K-Mechanism

INTERCHANGEABILITY CODE									See the I/C column on the following Part Number List				
	Parts	Production		Parts	Production		Parts	Production		Parts	Production	E	Addition
A	Original	Early	B	Original	Early	C	Original	Early	D	Original	Early	F	Deletion
	New	Late		New	Late		New	Late		New	Late	G	Other

Parts Number List

Ref No.	Original Part No.	New Part No.	Part Name & Description	I/C	Remarks
49(1)	VXL2246	VXL2767 or VXL2246	PINCH ARM UNIT	A	

4. Improvement of Blue Back Picture
Effective From:A7.....

MODEL	ORDER NO.
NV-SD300AM,SD400EU	VRD9410M154
NV-HD600BD	VRD9507M129
NV-HD600MK2A	VRD9608M123

INTERCHANGEABILITY CODE									See the I/C column on the following Part Number List				
	Parts	Production		Parts	Production		Parts	Production		Parts	Production	E	Addition
A	Original	Early	B	Original	Early	C	Original	Early	D	Original	Early	F	Deletion
	New	Late		New	Late		New	Late		New	Late	G	Other

Parts Number List

Ref No.	Original Part No.	New Part No.	Part Name & Description	I/C	Remarks
C7711	ECUM1H180JCN	ECUM1H120JCN	C.CAPACITOR CH 50V 12P	B	

Order No. VRD9809046S2

Service Manual

Supplement

Effective from : Mentioned Below

Video Product

Model No. Mentioned Below

Subject : Deletion of Vibration Proof Rubber / Prevention of Wow Noise

Please use this service manual together with the service manual for Order No. Mentioned Below

	Model No.	Order No.	Subject
(1)	NV-HD620EG/EGH/B/BL/EC	VRD9704005C2	Deletion of Vibration proof Rubber
	NV-HD620EGM/ECN	VRD9706006C2	
	NV-HD620F	VRD9706012C2	
	NV-HD625EE	VRD9708013C2	
	NV-HD625EG/EGH/EGM/B/EC	VRD9706007C2	
	NV-HD625F	VRD9709014C2	
	NV-SD210SA	VRD9703M104	
	NV-SD220A/SA	VRD9703M104	
	NV-SD220AM/AMJ	VRD9703M105	
	NV-SD225AM/AMJ/EU	VRD9703M105	
	NV-SD270A/EA/SA	VRD9703M104	
	NV-SD320AM/AMJ	VRD9611M126	
	NV-SD420A/EA/EU/SA	VRD9611M126	
	NV-SD420AR	VRD9706010C3	
(2)	NV-SD230EG/B/BL	VRD9802002C2	Prevention of Wow Noise
	NV-SD230F	VRD9803013C2	
	NV-SD275EG	VRD9806020A2	
	NV-SD430EG/B/BL	VRD9803012C2	
	NV-SD430F	VRD9807025C2	
	NV-SD437EE	VRD9807026C2	

1.SUBJECT: Deletion of Vibration proof Rubber

*.Effective Model: Refer to "(1)".
*.Effective From: A8......

Please refer to Supplement Service Manual (Order No. VRD9704006S8).

INTERCHANGEABILITY CODE See the I/C column on the following Part Number List

	Parts	Production		Parts	Production		Parts	Production		Parts	Production	E	Addition
A	Original	Early	B	Original	Early	C	Original	Early	D	Original	Early	F	Deletion
	New	Late		New	Late		New	Late		New	Late	G	Other

Parts Number List

Ref No.	Original Part No.	New Part No.	Part Name & Description	I/C	Remarks
82(4)	VMG1074	------------	VIBRATION PROOF RUBBER	F	

(Please see reverse side)

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2.SUBJECT: Prevention of Wow Noise Sounds.

*.Effective Model: Refer to "(2)".
*.Effective From: F8......

During the normal playback mode, static electricity noise from the mechanism may be entered into the capstan Servo Circuit in low humidity condition. By this noise, the microprocessor may miss detect the control pulse, then Servo circuit is disturbed. Thus, Wow Noise Sounds may occur.

INTERCHANGEABILITY CODE									See the I/C column on the following Part Number List				
	Parts	Production		Parts	Production		Parts	Production		Parts	Production	E	Addition
A	Original	Early	B	Original	Early	C	Original	Early	D	Original	Early	F	Deletion
	New	Late		New	Late		New	Late		New	Late	G	Other

Parts Number List

Ref No.	Original Part No.	New Part No.	Part Name & Description	I/C	Remarks
	VEP06C32D		MAIN C.B.A.		NV-SD230EG
C2519	ECUM1H104ZFN	ECUM1C184KBN	C.CAPACITOR CH 50V 0.18U	C	
	VEP06C32E		MAIN C.B.A.		NV-SD230B
C2519	ECUM1H104ZFN	ECUM1C184KBN	C.CAPACITOR CH 50V 0.18U	C	
	VEP06C32F		MAIN C.B.A.		NV-SD230BL
C2519	ECUM1H104ZFN	ECUM1C184KBN	C.CAPACITOR CH 50V 0.18U	C	
	VEP06C32L		MAIN C.B.A.		NV-SD230F
C2519	ECUM1H104ZFN	ECUM1C184KBN	C.CAPACITOR CH 50V 0.18U	C	
	VEP06C81B		MAIN C.B.A.		NV-SD275EG
C2519	ECUM1H104ZFN	ECUM1C184KBN	C.CAPACITOR CH 50V 0.18U	C	
	VEP06C32A		MAIN C.B.A.		NV-SD430EG
C2519	ECUM1H104ZFN	ECUM1C184KBN	C.CAPACITOR CH 50V 0.18U	C	
	VEP06C32B		MAIN C.B.A.		NV-SD430B
C2519	ECUM1H104ZFN	ECUM1C184KBN	C.CAPACITOR CH 50V 0.18U	C	
	VEP06C32C		MAIN C.B.A.		NV-SD430BL
C2519	ECUM1H104ZFN	ECUM1C184KBN	C.CAPACITOR CH 50V 0.18U	C	
	VEP06C32J		MAIN C.B.A.		NV-SD430F
C2519	ECUM1H104ZFN	ECUM1C184KBN	C.CAPACITOR CH 50V 0.18U	C	
	VEP06C81E		MAIN C.B.A.		NV-SD437EE
C2519	ECUM1H104ZFN	ECUM1C184KBN	C.CAPACITOR CH 50V 0.18U	C	

INTERNAL REFERENCE CODES

NOTE : This chart is only for internal reference.
Do not order any parts according to these codes.

P. C. B.	FILM CODE
MAIN SYUGOU (MAIN, HEAD AMP)	HOAI01-0378A
POWER	HOAI00-01799
CAPSTAN	HOAI04-02544
CYLINDER DRIVE	HOAI01-00V01

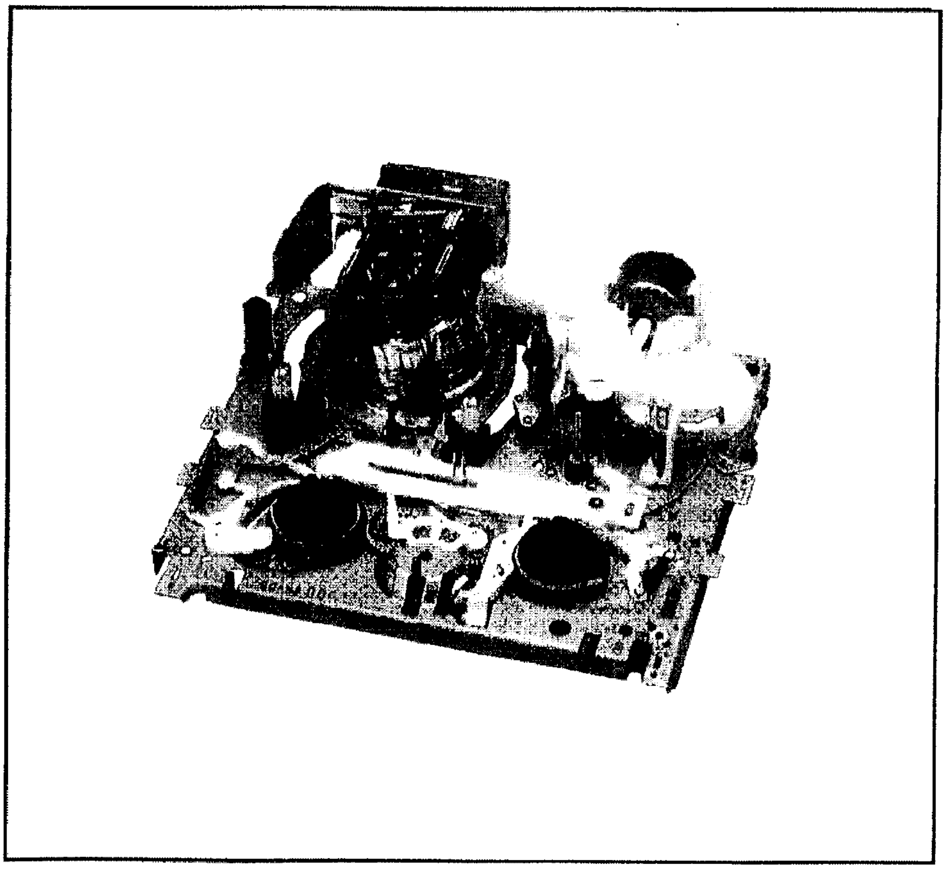
ORDER NO. VRD9802005C2

Service Manual

Video Cassette Recorder

Panasonic VHS

Z-MECHANISM CHASSIS



INTRODUCTION

The Z-Mechanism chassis are built in several Panasonic VHS Video Cassette Recorders from NV-SD and NV-HD series in 1998.

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9. EXPLODED VIEWS & REPLACEMENT PARTS LIST
    9-1. MECHANICAL REPLACEMENT PARTS SECTION

1. OUTLINE OF Z MECHANISM

1-1. The tape transport path

(1) Mechanism Chassis

Aluminium Chassis has been changed to sheet metal (Thickness: 1.2 mm).

(2) Capstan position (Cassette-in method/Capstan-in method)

The Tape does not touch the Cassette tape so that the rationalization has been promoted such as Reel gear pinch up/down mechanism has been deleted.

(3) Deletion of P1 post

FE Head has been installed Limiter so that P1 post has been deleted.

(4) A/C Head base combined with P4 post

A/C Head has been combined with P4 post on the same base.

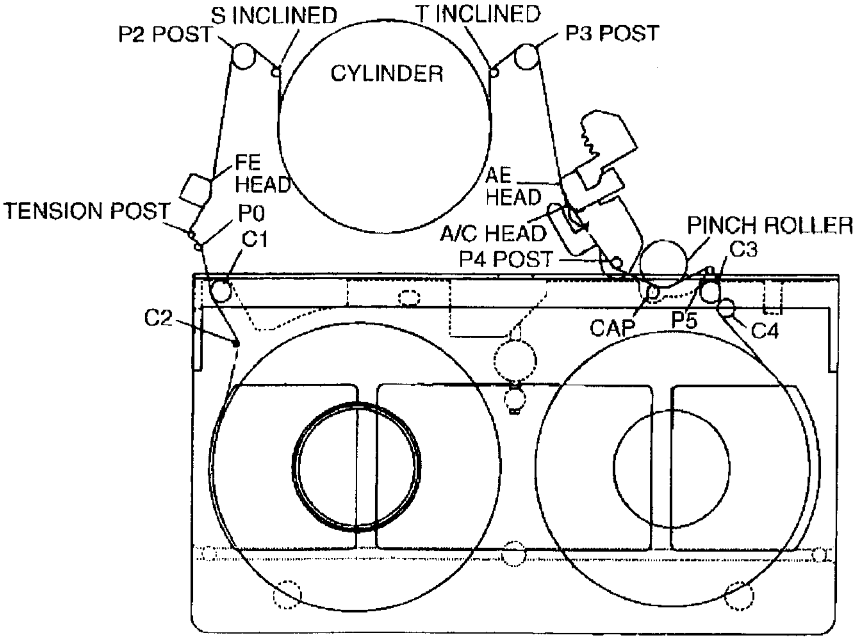
(5) Change of A/C head base type

The change of the angle winding the tape on A/C head has been reduced by the construction of A/C head base has been changed from the revolution type to slide base type.

(6) Improvement of P5 post

P5 post operation has been changed by non-adjustable of the Height and the Tilt adjustment so that the specification has been improved.

Z Mechanism tape transport path in REV mode


S INCLINED
T INCLINED
P2 POST
P3 POST
CYLINDER
FE HEAD
AE HEAD
TENSION POST
P0
C1
A/C HEAD
PINCH ROLLER
C3
P4 POST
C2
CAP
P5
C4

1-2. Cassette holder unit

(1) Cassette-in operation

The Rack drive arm drives Main Cam gear by inserting the cassette tape. Consequently, Position switch detects the cassette-in mode so that Loading motor drives. The mode goes to the Stop mode from the Cassette-in through the Loading mode.

① The parts quantity reduction of Cassette holder unit.

(Z Mechanism: 21 pieces, K Mechanism: 36 pieces)

a. Release lever has been installed in Right Side Plate.

b. Cassette guide has been installed in Front Panel unit.

c. Safety lever spring is made by the resin.

d. Opener lever has been changed into the single opener type.

e. One side of Side Plate unit is hung on Chassis in order to fix it.

② Improvement of the cassette insertion

(The force of the cassette insertion Z Mechanism: Approximately 400gm.,
K Mechanism: Approximately 600gm.)

The tooth pitch of Worm gear which has been extended against the previous model, is located on the Motor so that Worm gear can be reversed. Consequently, the Motor rotates before the insertion spring (the combined spring) is working when the cassette tape is inserted, so that the repelled force of the insertion spring has been reduced as differing from the present model.

③ Small-sized Cassette holder unit (Thinned unit)

a. The Wiper arm method which has been adopted, assigned Wiper arm between Cassette Holder Plate and Side Plate so that the small-sized of the width has been realized.

b. To prevent the increment of parts quantity such as Safety lever is used for Pre-open mechanism shown in the present model, and the small-sized unit has been realized by inclining one portion of the L groove in Side Plate.

c. The part of driving change-over is located in the nearest to the center of Reel so that the depth size is compacter.

1-3. Reel brake

(1) Supply Reel Brake is used for Tension Regulator which is composed of the conventional Main brake and the soft brake function.

(2) Take-up Reel Brake is used as Band Brake unit in order to correspond with Supply Reel Brake.

※ Tension Regulator performance:

This is composed of Tension regulator and brake. The tape always is given the tension against the advance direction by Tension band.

(3) Construction of Supply reel tension regulator

Comparison of the construction with the conventional model

	Z Mechanism	**K Mechanism**
Tension Arm Shaft Bearing construction	Resin	Tension arm
Tension Band	Felt less Lumiller	Felt Lumiller
Braking method	Tension regulator	Main & soft brake

Operating mode and necessary function

Mechanism mode	Necessary function	Operation
Cassette down	Prevention of the tape slag (Soft brake)	Soft brake
Completion of Loading	Prevention of the tape slag (Soft brake)	Tension regulator
REV	Prevention of in Play mode to REV mode (Soft brake)	Tension regulator
PLAY, FF	Back tension adjustment	Same as the conventional
STOP	Main brake function	Tension regulator

(4) Construction of Take-up brake

Take-up brake is used Band brake as well as Supply brake depend on corresponding with Band brake is adopted at the Supply Side.

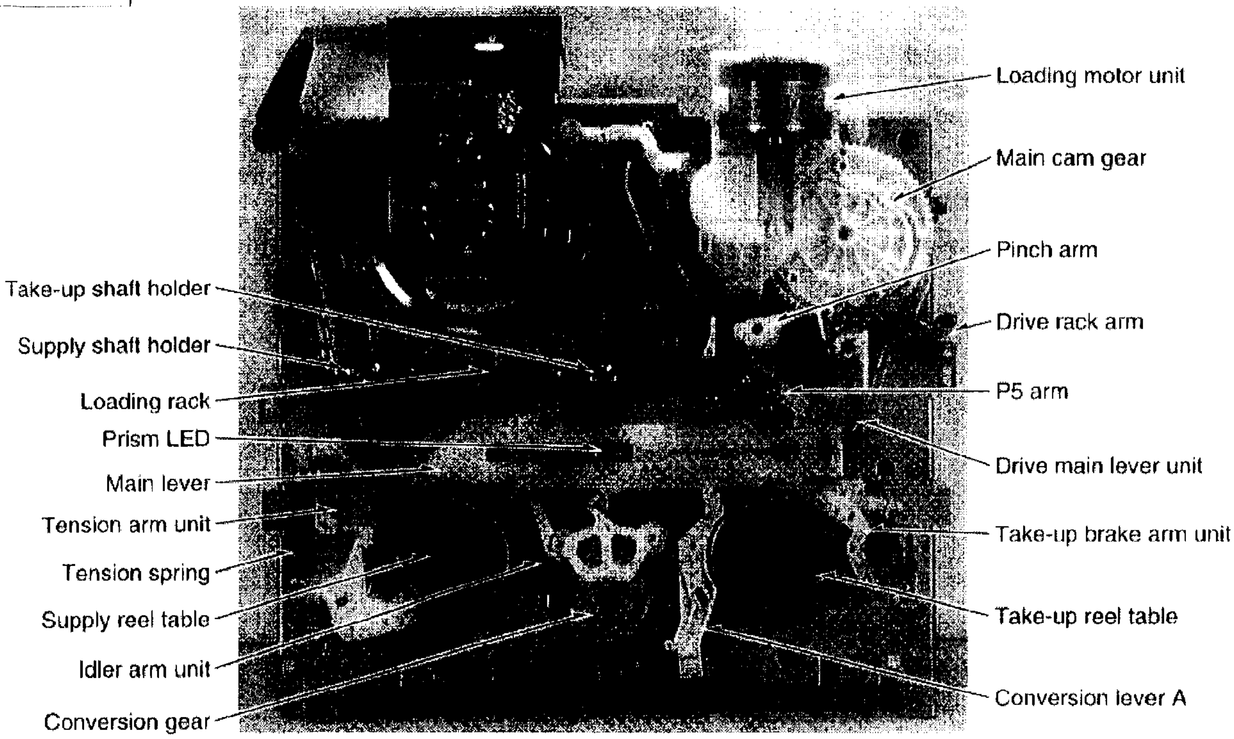
Mechanism mode	Function	Band
EJECT-MID	Soft brake	On
REV	Soft brake	On
PLAY	Release of brake	Off
STOP	Brake	On
FF/REW	Release of brake	Off

1-4. Number of Gear Phase Alignment Point and Replacement Parts

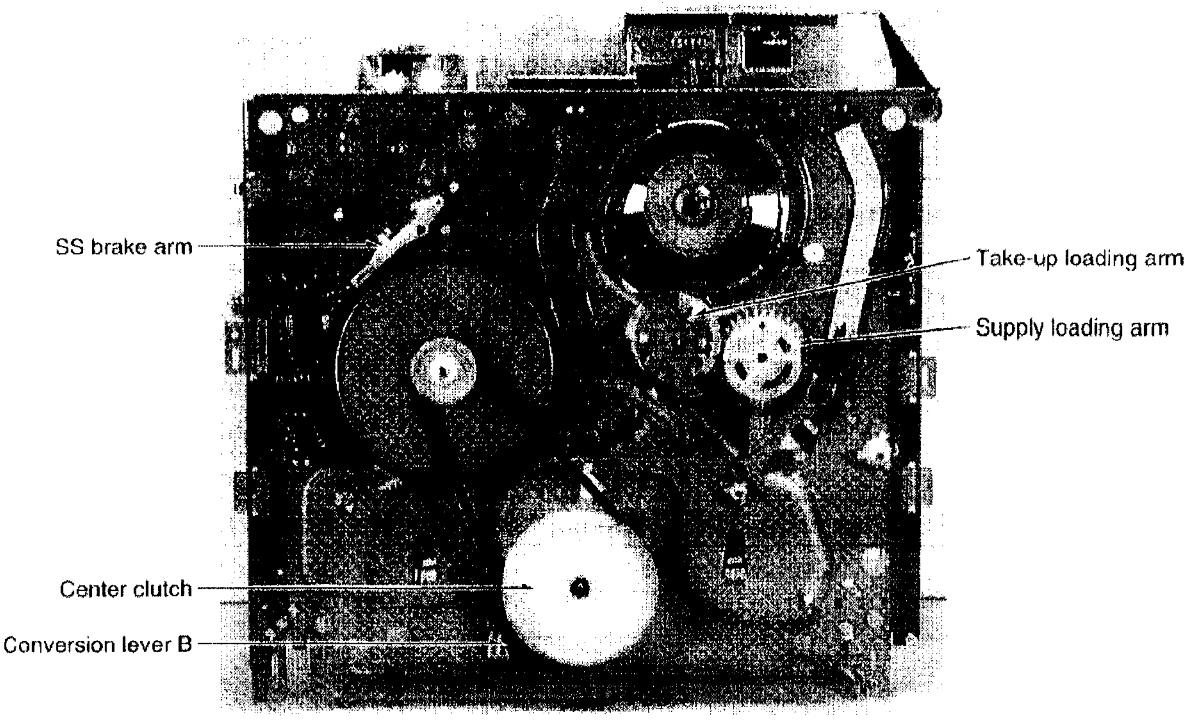
Number of Gear Phase Alignment Point	
G2 Mechanism	12 Alignment Points
G Mechanism	12 Alignment Points
K Mechanism	6 Alignment Points
Z Mechanism	4 Alignment Points
Number of Replacement Parts (including the Screw and Washer)	
G2 Mechanism	Approx.170 Pieces
G Mechanism	Approx. 150 Pieces
K Mechanism	Approx. 100 Pieces
Z Mechanism	Approx. 70 Pieces

Z Mechanism Components

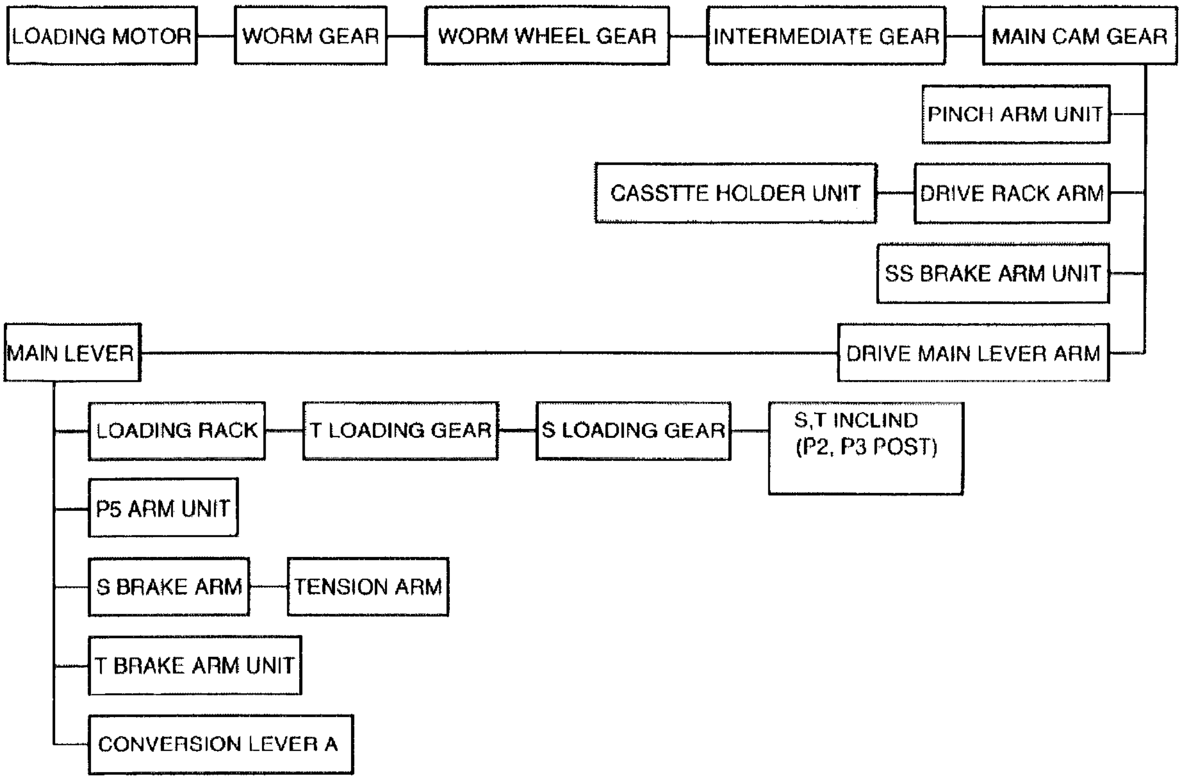
TOP VIEW

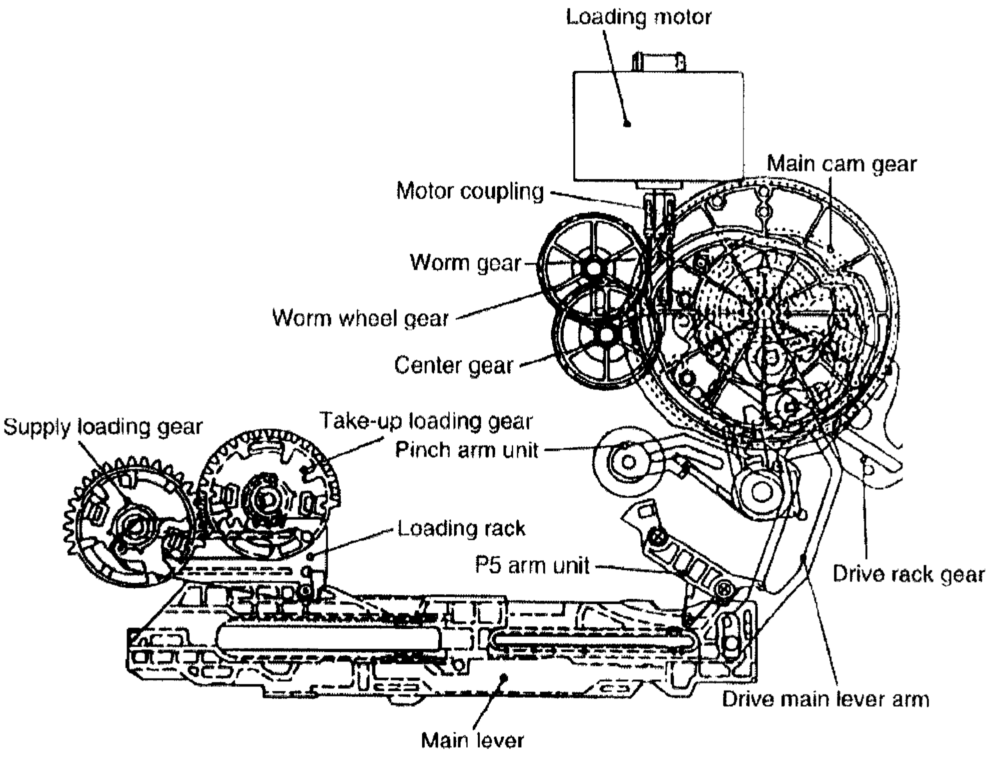

Take-up shaft holder
Supply shaft holder
Loading rack
Prism LED
Main lever
Tension arm unit
Tension spring
Supply reel table
Idler arm unit
Conversion gear
Loading motor unit
Main cam gear
Pinch arm
Drive rack arm
P5 arm
Drive main lever unit
Take-up brake arm unit
Take-up reel table
Conversion lever A

BOTTOM VIEW


SS brake arm
Center clutch
Conversion lever B
Take-up loading arm
Supply loading arm

FLOW CHART OF LOADING MECHANISM


LOADING MOTOR
WORM GEAR
WORM WHEEL GEAR
INTERMEDIATE GEAR
MAIN CAM GEAR
PINCH ARM UNIT
CASSTTE HOLDER UNIT
DRIVE RACK ARM
SS BRAKE ARM UNIT
MAIN LEVER
DRIVE MAIN LEVER ARM
LOADING RACK
T LOADING GEAR
S LOADING GEAR
S,T INCLIND
(P2, P3 POST)
P5 ARM UNIT
S BRAKE ARM
TENSION ARM
T BRAKE ARM UNIT
CONVERSION LEVER A


Loading motor
Main cam gear
Motor coupling
Worm gear
Worm wheel gear
Center gear
Supply loading gear
Take-up loading gear
Pinch arm unit
Loading rack
P5 arm unit
Drive rack gear
Drive main lever arm
Main lever

2. REMOVAL OF CASSETTE TAPE

There are 2 ways to remove a cassette tape.

2-1. Removal of compulsory loading

(1) Press FF and EJECT buttons simultaneously for more than 3 seconds and set the Service Mode 7.

In case of VCR mounted shuttle ring, turn the shuttle ring to FF and then press EJECT button for more than 3 seconds.

In Loewe model, STOP button is used instead of FF button.

(2) Press STOP button in order to unload the mechanism. (Pay an attention of tape slack)

Service Mode Indication :

7 ※※ ※※ (STOP)→7 00 ※※ (EJECT)

2-2. Removal of manual operation of Main cam gear

(1) Disconnect the AC power cord and remove Top Panel.

(2) Rotate Main cam gear to the clockwise and unload the mechanism (Tape is remaining) (Fig. A1).

TOP VIEW

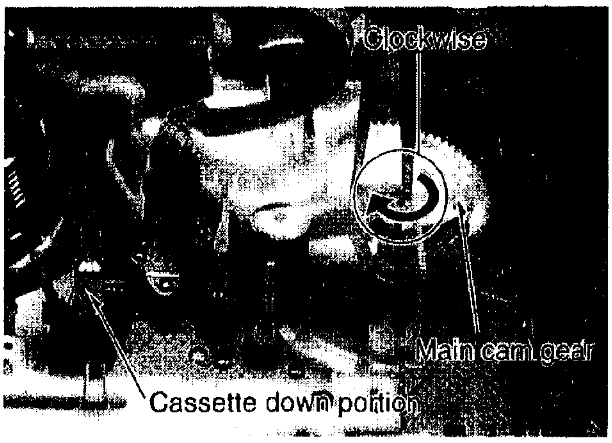


Fig. A1

(3) Rotate the Pole of Capstan motor to the clockwise from the bottom in order to remove the tape slack (Fig. A2).

BOTTOM VIEW

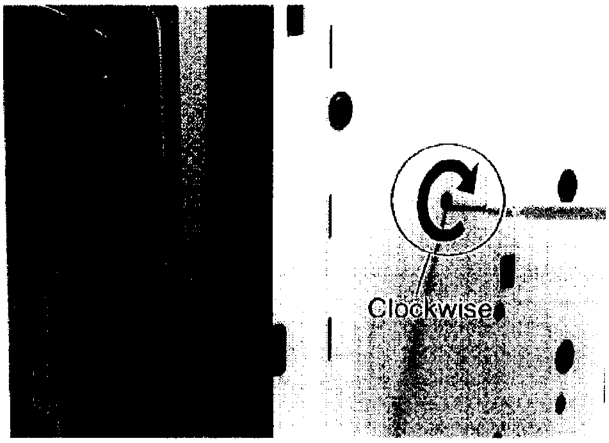


Fig. A2

(4) Rotate Main cam gear to the clockwise in order to eject the cassette tape.

3. REMOVAL OF CASSETTE HOLDER UNIT & MECHANISM CHASSIS

3-1. Removal of Cassette holder unit

(1) Remove Top panel and Front panel unit (Fig. B1).

TOP VIEW

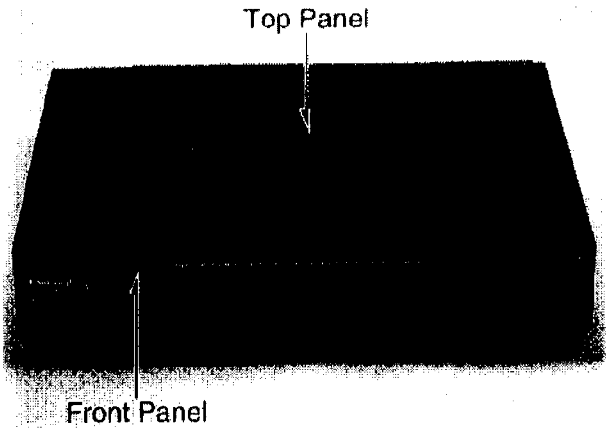

Top Panel
Front Panel

Fig. B1

(2) Remove Top plate

Remove 4 tabs fixing Top plate and remove Top plate (Fig. B2).

※ 4 Tabs should be removed softly due to they are fragile.

TOP VIEW

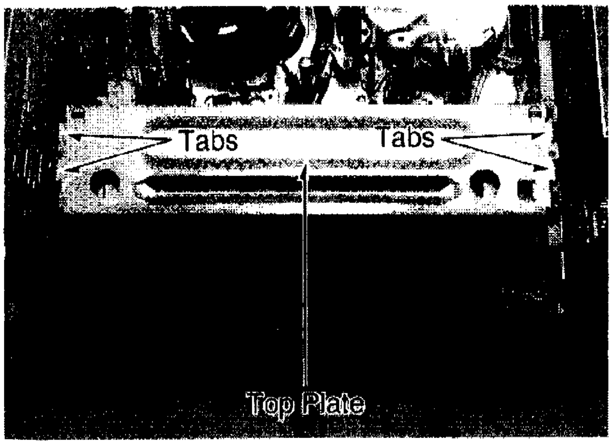

Tabs
Tabs
Top Plate

Fig. B2

(3) Remove Cassette Holder

Keep pressing 2 stoppers on Cassette holder and Press Cassette holder to the rear and remove it from Left and Right Side Plate (Fig. B3).

TOP VIEW

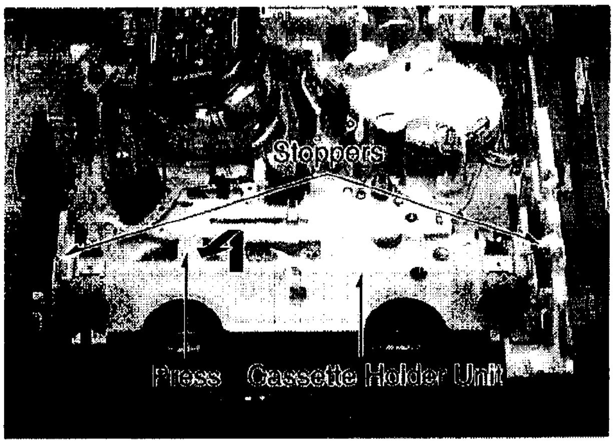

Stoppers
Press
Cassette Holder Unit

Fig. B3

(4) Remove Left and Right Side Plate

Remove connection spring of Drive gear.

Remove 3 red screws, 3 tabs and remove Left and Right Side Plate (Fig. B4, B5).

TOP VIEW

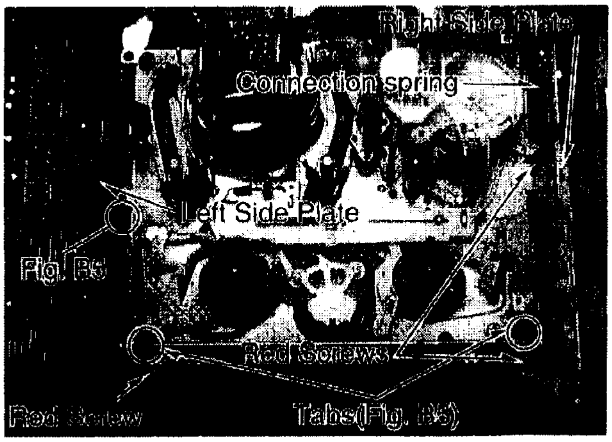

Right Side Plate
Connection spring
Left Side Plate
Fig. B5
Red Screws
Red Screw
Tabs(Fig. B5)

Fig. B4

TOP VIEW

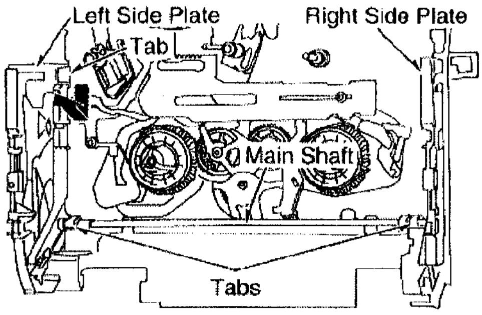

Left Side Plate
Right Side Plate
Tab
Main Shaft
Tabs

Fig. B5

(5) Remove Main shaft (Fig. B6)

TOP VIEW

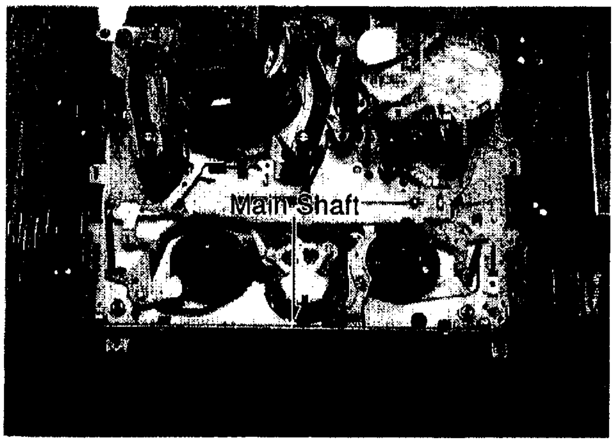


Fig. B6

3-2. Removal of Mechanism chassis

(1) Remove Mechanism chassis

Disconnect P3001, P2502 and P4002 (the connectors of Head amp C.B.A., Cylinder unit and A/C Head). Remove 5 screws (3 red screws and 2 gold screws) on Mechanism chassis and take out Mechanism chassis (Fig. B7).

TOP VIEW

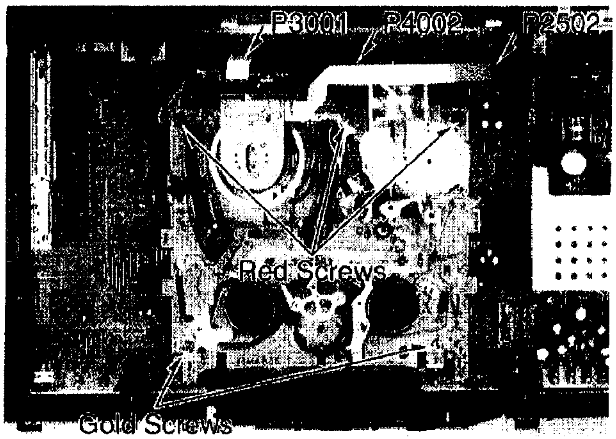

P3001
P4002
P2502
Red Screws
Gold Screws

Fig. B7

4. DISASSEMBLY/ASSEMBLY METHOD FOR MECHANISM

4-1. Disassembly of mechanism

1. Removal of Pinch arm

   Unlock the tab (opener piece). Remove Opener piece and Pinch arm (Fig. C1).

2. Removal of Loading motor unit

   Unlock 3 tabs and remove Loading motor unit (Fig. C1, C2).

   2 tabs of them located on the bottom of the Mechanism (Fig. C2).

TOP VIEW

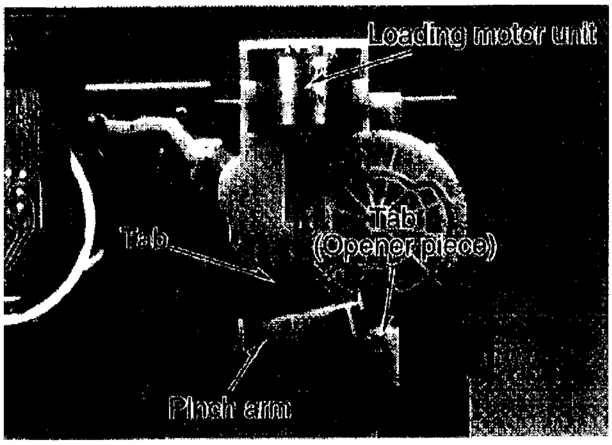

Loading motor unit
Tab
Tab
(Opener piece)
Pinch arm

Fig. C1

BOTTOM VIEW

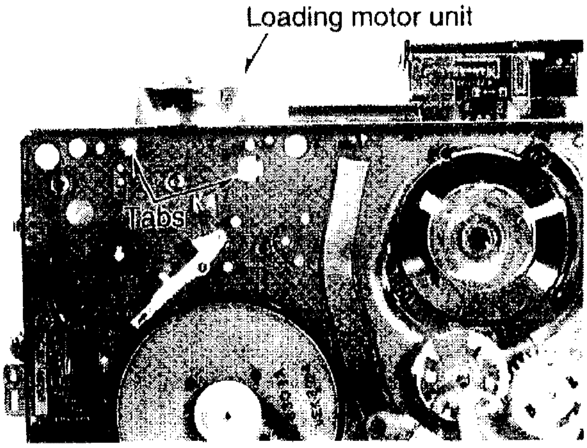

Loading motor unit
Tabs

Fig. C2

3. Removal of Main cam gear

   Remove Snap washer located on the bottom of Chassis by using retaining ring remover (Fig. C3) and remove Main cam gear (Fig. C4).

BOTTOM VIEW

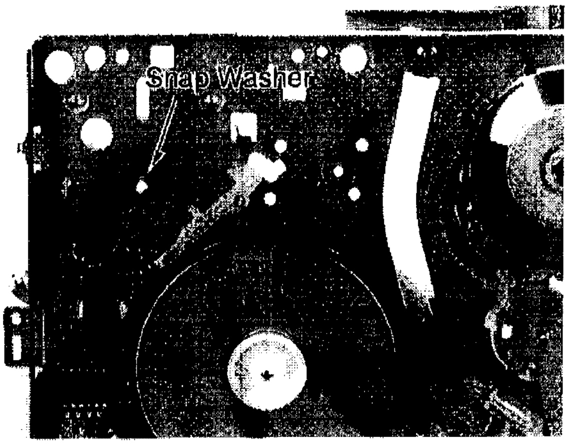

Snap Washer

Fig. C3

TOP VIEW

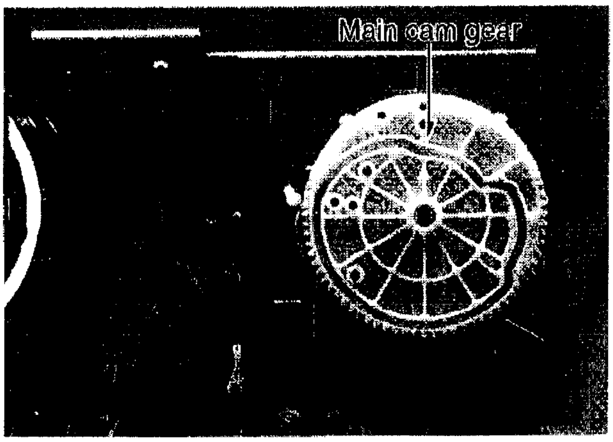

Main cam gear

Fig. C4

4. Removal of Drive rack arm
   Rotate Drive rack arm to the counterclockwise and remove it (Fig. C5).

TOP VIEW

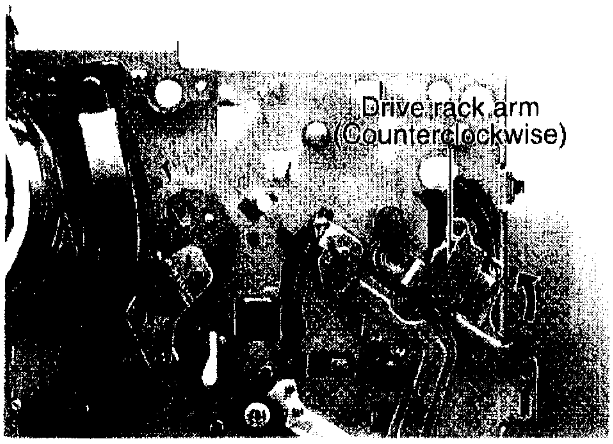

Drive rack arm
(Counterclockwise)

Fig. C5

5. Removal of Main lever, P5 arm and Conversion lever A
   Unlock 2 tabs of Prism LED and 1 tab on the projection of Chassis while keep lifting the left side of Main lever, and remove Main lever, P5 arm and Conversion lever A (Fig. C6).

※ It is easier to unlock the tabs by using a tweezer.

TOP VIEW

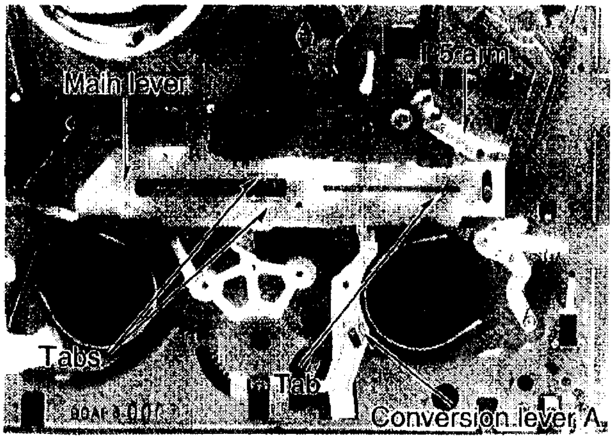

Main lever
P5 arm
Tabs
Tab
Conversion lever A

Fig. C6

6. Removal of Drive main lever arm
   Rotate Drive main lever arm to the counterclockwise and remove it (Fig. C7).

TOP VIEW

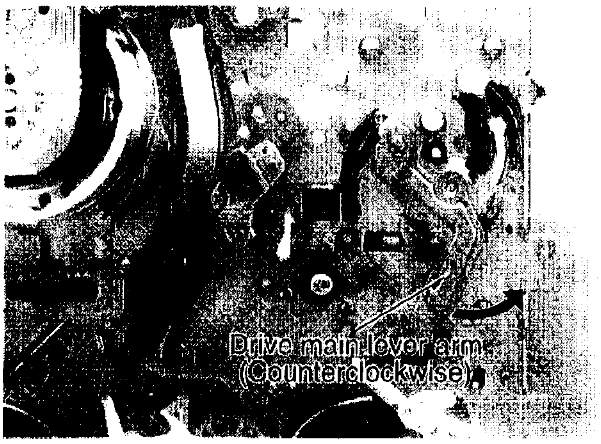

Drive main lever arm
(Counterclockwise)

Fig. C7

7. Removal of Tension arm unit and Supply reel table
   Remove Tension spring (Fig. C8). Unlock the tab of Tension arm projection on the bottom of Chassis (Fig. C9) and remove Tension arm unit and Supply reel table (Fig. C8).

※ When remove supply reel table, be sure whether a washer attaches on Supply reel table shaft (Fig. C10).

TOP VIEW

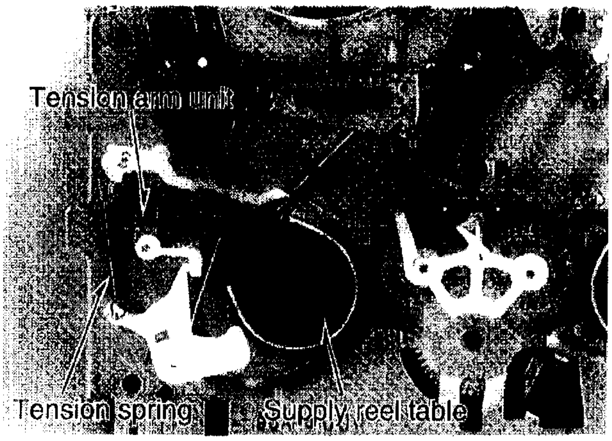

Tension arm unit
Tension spring
Supply reel table

Fig. C8

BOTTOM VIEW

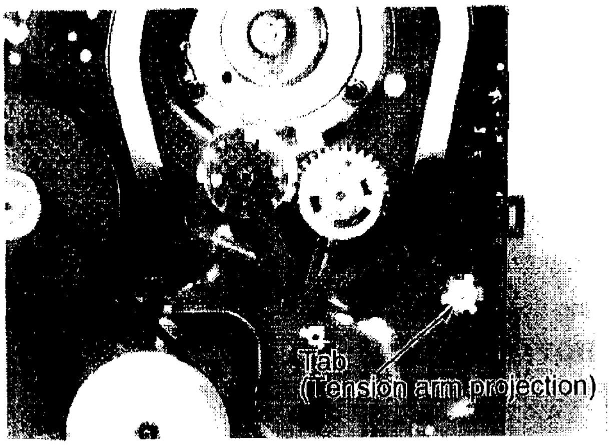

Tab
(Tension arm projection)

Fig. C9

SIDE VIEW

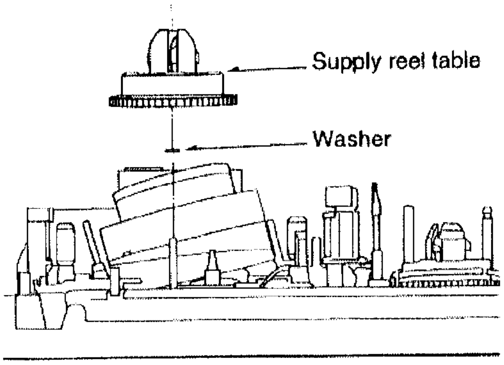

Supply reel table
Washer

Fig. C10

8. Remove of Take-up brake arm unit and Take-up reel table
   Unlock the tab of Take-up brake arm unit from the bottom of Chassis (Fig. C12). Remove Take-up brake arm unit and Take-up reel table (Fig. C11).

※ When remove Take-up reel table, be sure whether a washer attaches on Take-up reel table shaft (Fig. C13).

TOP VIEW

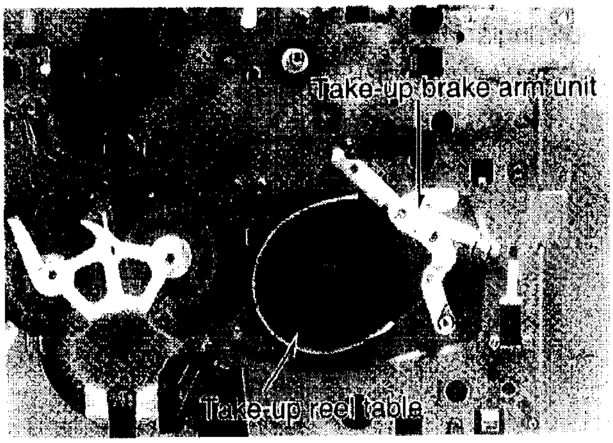

Take-up brake arm unit
Take-up reel table

Fig. C11

BOTTOM VIEW

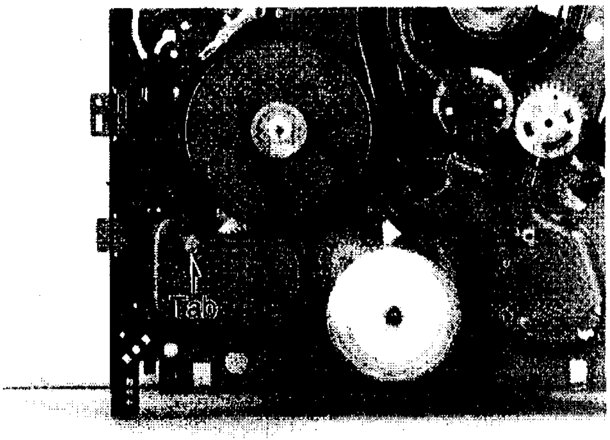


Fig. C12

SIDE VIEW

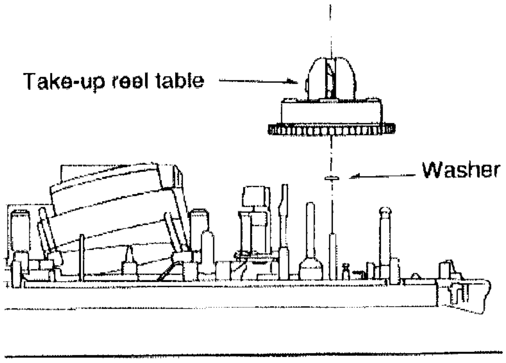

Take-up reel table
Washer

Fig. C13

9. Removal of Take-up & Supply loading arm
   Unlock the tab and remove Take-up and Supply loading arm (Fig. C14).

BOTTOM VIEW

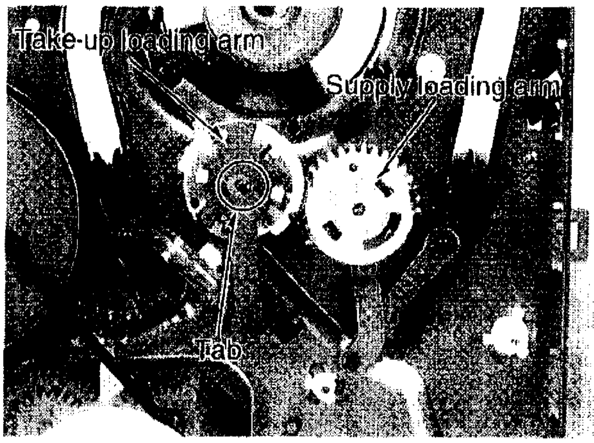

Take-up loading arm
Supply loading arm
Tab

Fig. C14

10. Removal of Prism LED, Take-up & Supply shaft holder and Loading rack
    Push the tab of Prism LED and remove Prism LED. Remove Take-up and Supply shaft holder from the groove of Chassis and remove Loading rack (Fig. C15).

TOP VIEW

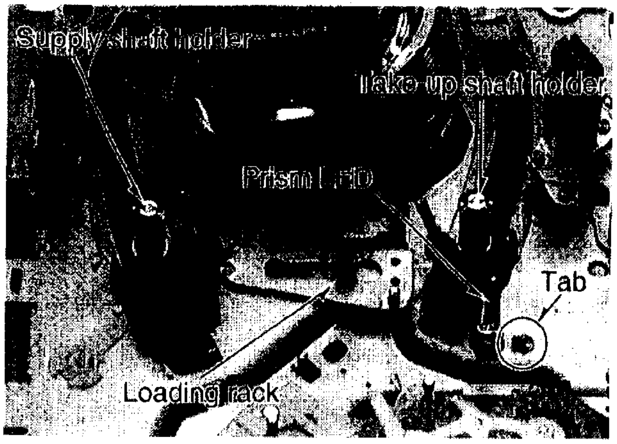

Supply shaft holder
Take-up shaft holder
Prism LED
Tab
Loading rack

Fig. C15

11. Removal of Center clutch, Conversion gear spring, Conversion gear, Conversion lever B and Idler arm unit
    Remove the Belt and the Cut washer (Fig. C16).
    Remove Center clutch (Fig. C16), Conversion gear spring, Conversion gear, Conversion lever B and Idler arm unit (Fig. C17).

※ Pay an attention of Conversion gear spring during the removal.

BOTTOM VIEW

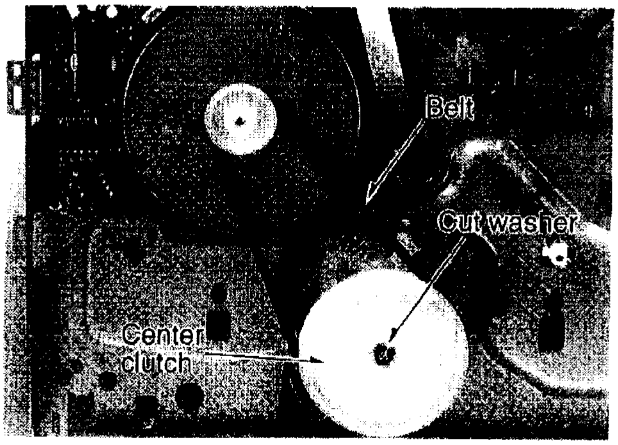

Belt
Cut washer
Center clutch

Fig. C16

BOTTOM VIEW

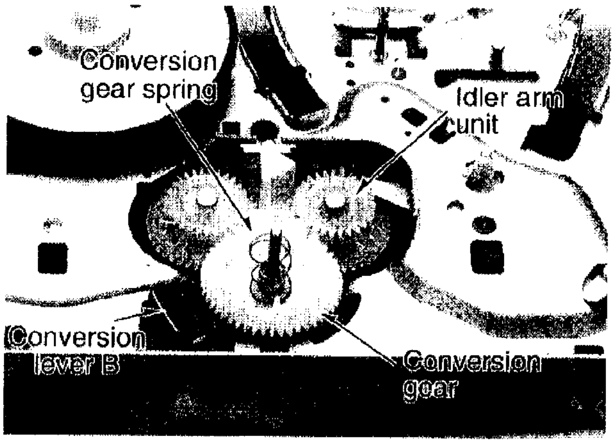

Conversion gear spring
Idler arm unit
Conversion lever B
Conversion gear

Fig. C17

12. Removal of Capstan unit

Remove 3 gold screws (Fig. C18).

Remove 2 gold screws on the bottom of Chassis (Fig. C19).

Keep moving SS brake arm and remove Capstan unit.

TOP VIEW

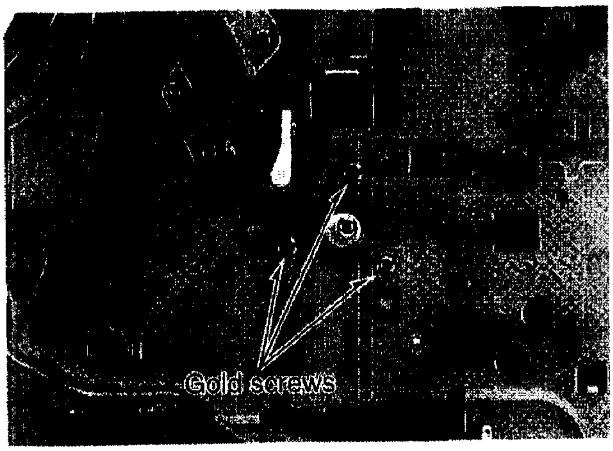

Gold screws

Fig. C18

BOTTOM VIEW

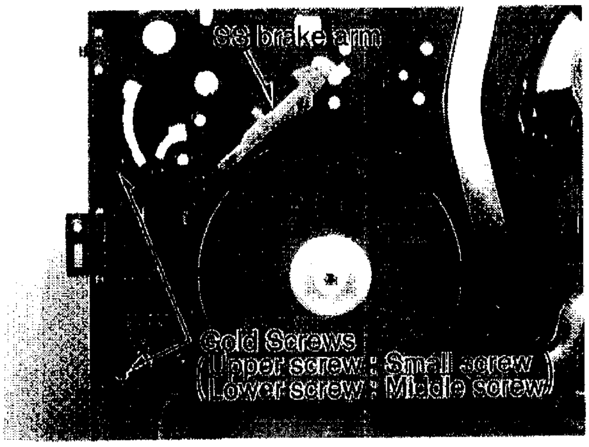

SS brake arm
Gold Screws
(Upper screw : Small screw)
(Lower screw : Middle screw)

Fig. C19

13. Removal of Cylinder unit

Remove red screw (Fig. C20).

Remove 3 gold screws on the bottom of Chassis and remove Cylinder unit (Fig. C21).

TOP VIEW

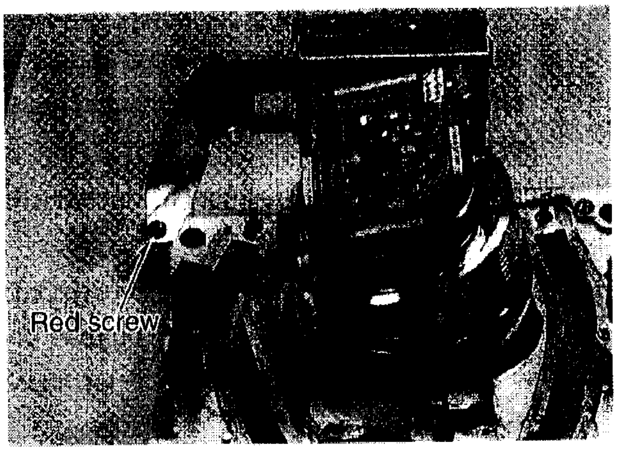


Fig. C20

BOTTOM VIEW

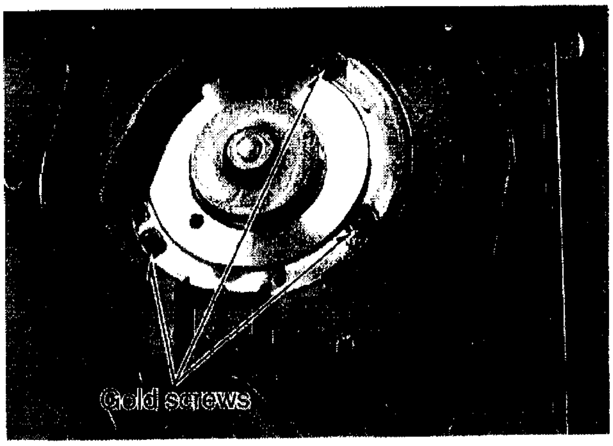

Gold screws

Fig. C21

4-2. Assembly and phase adjustment of mechanism

The gear phase alignment has been performed in the EJECT position and it is crucial for the Z Mechanism to operate correctly.

NOTE: In case of the parts replacement like Position switch, Mechanism position should be set to Eject position in order to fit the phase of Position switch.

1. Assembly and phase adjustment of Mechanism

(1) Assembly of Cylinder unit

Cylinder unit should be fixed by 3 screws (GOLD) from the bottom side of Mechanism chassis and red screw on the top side of Mechanism Chassis (Fig. E1, E2).

BOTTOM VIEW

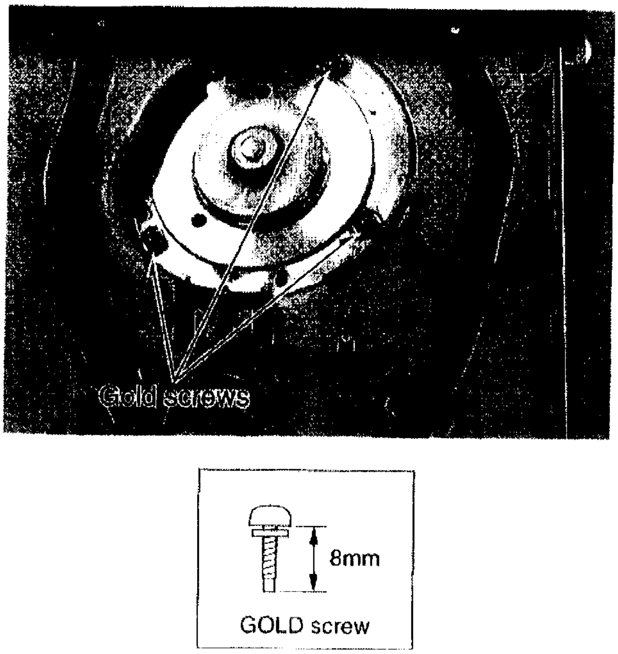

Gold screws
8mm
GOLD screw

Fig. E1

TOP VIEW

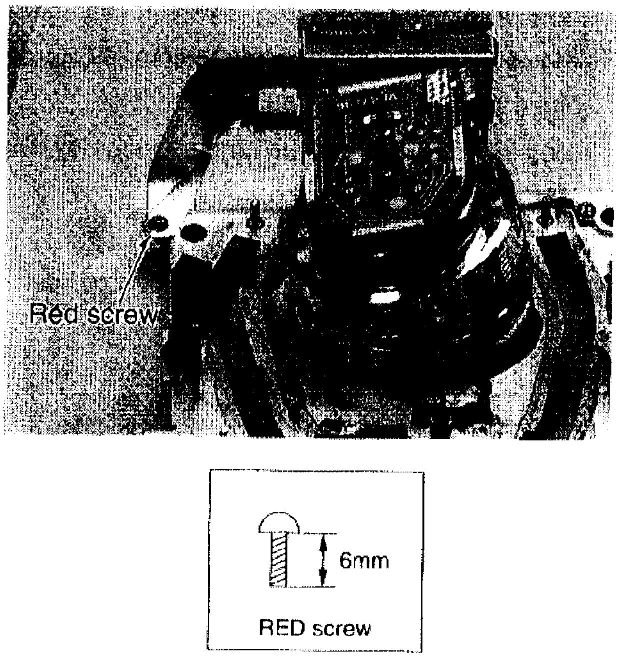

Red screw
6mm
RED screw

Fig. E2

(2) Assembly of Capstan unit

Move SS brake arm in the direction of arrow (see Fig. E3) and capstan unit should be fixed by 2 screws (GOLD) on the bottom side of Mechanism chassis and 3 screws (GOLD) on the top of Mechanism chassis (Fig. E3, E4).

BOTTOM VIEW

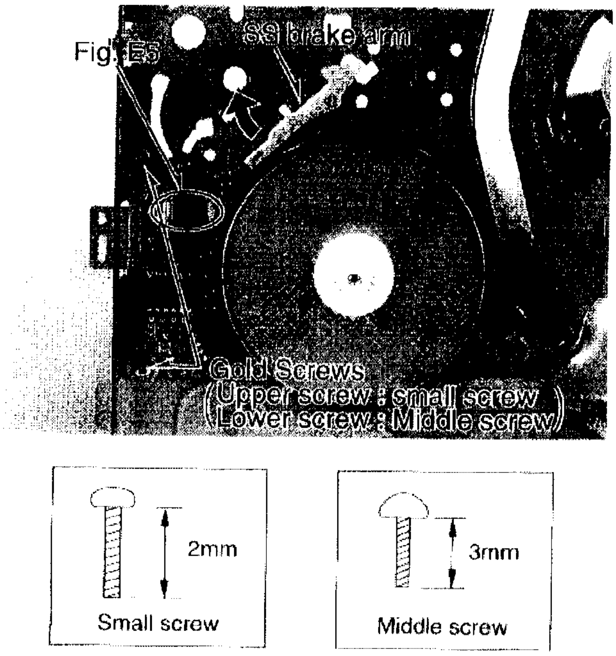


Fig. E5
SS brake arm
Gold Screws
(Upper screw : small screw
Lower screw : Middle screw)
2mm
Small screw
3mm
Middle screw

Fig. E3

TOP VIEW

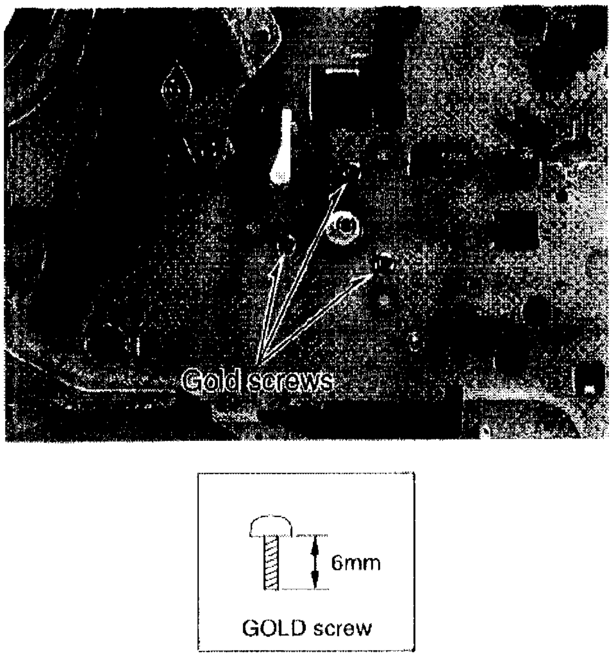


Fig. E4

NOTE: Replacement of Capstan unit and Procedure of applying the silicone grease.

REPLACEMENT OF CAPSTAN UNIT

In case of replacement of the Capstan Unit the Silicone grease have to be applied between the Mechanism chassis and the Drive IC by the following procedure.

Silicone grease No. VFK1301 for radiation of the Drive IC

Silicone grease is used for the radiation of the Drive IC. The heat occurred on the IC is radiated to the Mechanism chassis through the grease. In case of the incomplete radiation, the safety circuit operates depending on the rise of the temperature and it possibility stop the operation of the Drive IC.

PROCEDURE OF APPLYING THE SILICONE GREASE

① There is a cut-out part at the Drive IC mounting position and the bottom of the IC can be seen from the cut-out part. Apply the Silicon grease to whole the cut-out part of IC as shown in Fig. E5-1 so that the grease is piled 0.3–0.5 mm from the surface of the C.B.A.

② Next, from the component side of the C.B.A., apply the Silicon grease so that the grease is piled at the metal of the center of the IC as shown in Fig. E5-2.

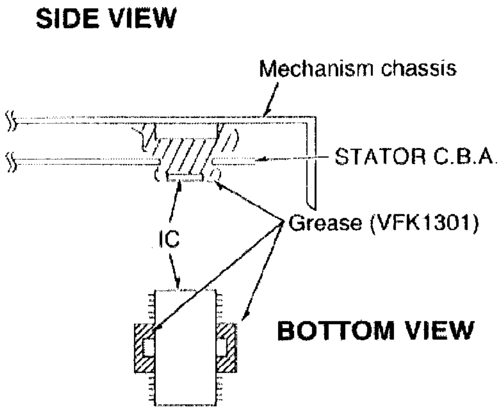


Fig. E5

TOP VIEW

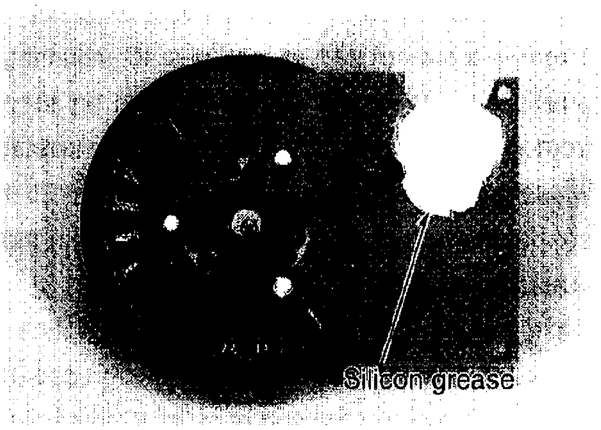

Silicon grease

Fig. E5-1

Fig. E5-1. Apply the Silicon grease so that the grease is piled 0.3–0.5 mm from the surface of the C.B.A.

BOTTOM VIEW

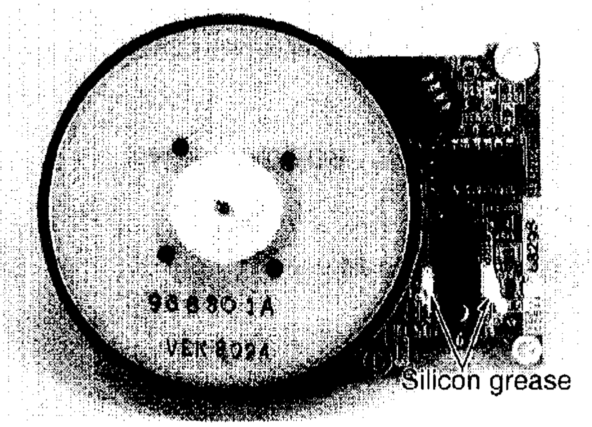

Silicon grease

Fig. E5-2

Fig. E5-2. Apply the Silicon grease at the metal of the center of the IC.

(3) Assembly of Idler arm unit, Conversion lever B, Conversion gear, Conversion gear spring and Center clutch

Put above parts together in the following order and fix them by Cut washer (Fig. E6), and install Capstan belt.

① Idler arm unit

② Conversion lever B

③ Conversion gear

④ Conversion gear spring

⑤ Center clutch

BOTTOM VIEW

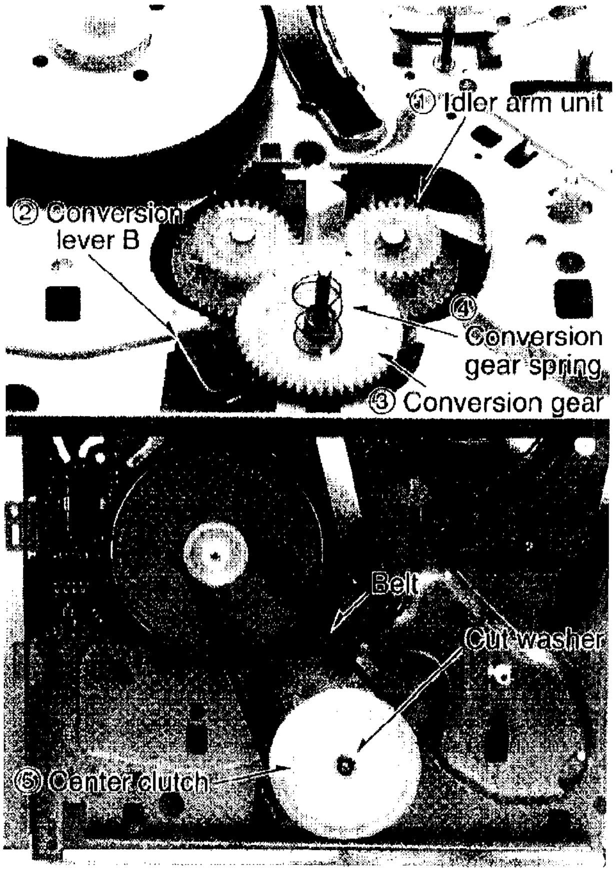

① Idler arm unit
② Conversion lever B
④ Conversion gear spring
③ Conversion gear
Belt
Cut washer
⑤ Center clutch

Fig. E6

(4) Assembly of Loading rack, Take-up & Supply shaft holder and Prism LED

Adjust the phase between the hole of Loading rack position fixture and the penetration hole of Chassis. Install Take-up and Supply shaft holder so that Take-up and Supply shaft holder fits the groove of Chassis.

Put Prism LED together (Fig. E7).

TOP VIEW

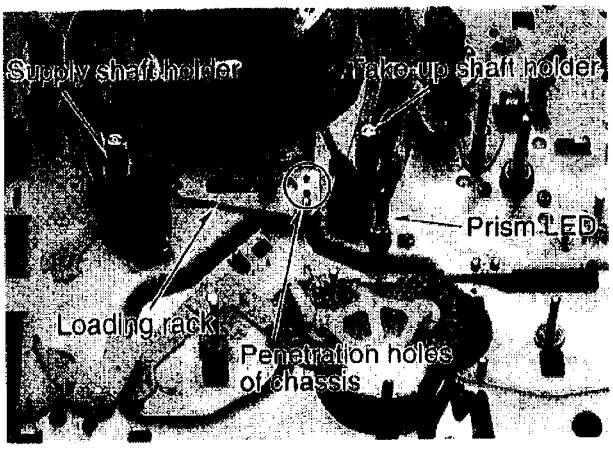

Supply shaft holder
Take-up shaft holder
Prism LED
Loading rack
Penetration holes of chassis

Fig. E7

(5) Assembly of Take-up and Supply Loading arm

Move Shaft holder to the unloading position. Adjust the phase of Take-up and Supply loading arm and insert the arm to the shaft (Fig. E8).

BOTTOM VIEW

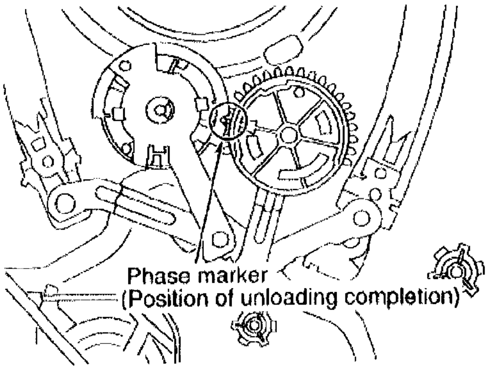

Phase marker
(Position of unloading completion)

Fig. E8

(6) Assembly of Take-up reel table and Take-up brake arm unit

Put washer, (Fig. E10) Take-up reel table and Take-up brake arm unit together (Fig. E9).

NOTE: The shape between portion A for Take-up reel table and portion B for Supply reel table is different.

Therefore, confirm the shape of portion A and B before mounting reel tables. If Take-up reel table has been confused with Supply reel table and they have been installed, the trouble of reel table rotation slip happens (Fig. E11).

TOP VIEW

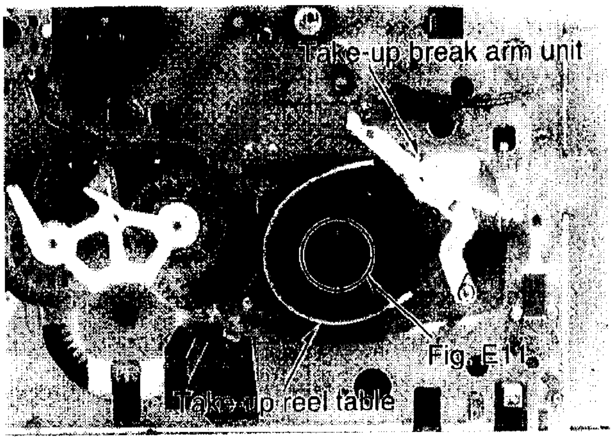

Take-up break arm unit
Fig. E11
Take-up reel table

Fig. E9

SIDE VIEW

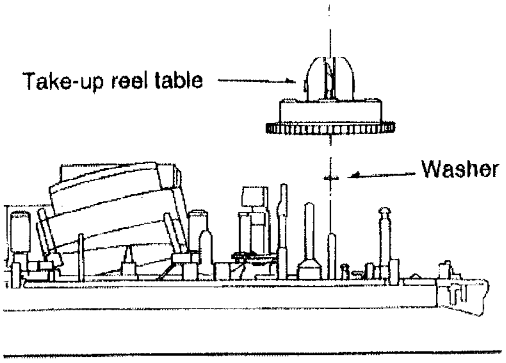

Take-up reel table
Washer

Fig. E10

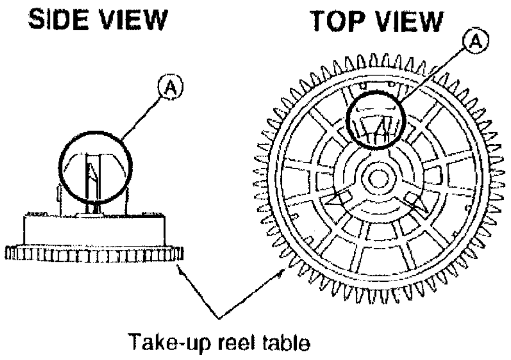

SIDE VIEW
TOP VIEW
Ⓐ
Ⓐ
Take-up reel table

Fig. E11

(7) Assembly of Supply reel table and Tension arm unit

Install washer (Fig. E13) and Supply reel table. Insert Tension arm unit to Tension arm projection and hang Tension spring with Supply spring arm projection (Fig. E12).

※1 Pay an attention of Position of the Supply spring arm.

NOTE: The shape between portion A for Take-up reel table and portion B for Supply reel table is different.

Therefore, confirm the shape of portion A and B before mounting reel tables. If Take-up reel table has been confused with Supply reel table and they have been installed, the trouble of reel table rotation slip happens (Fig. E14).

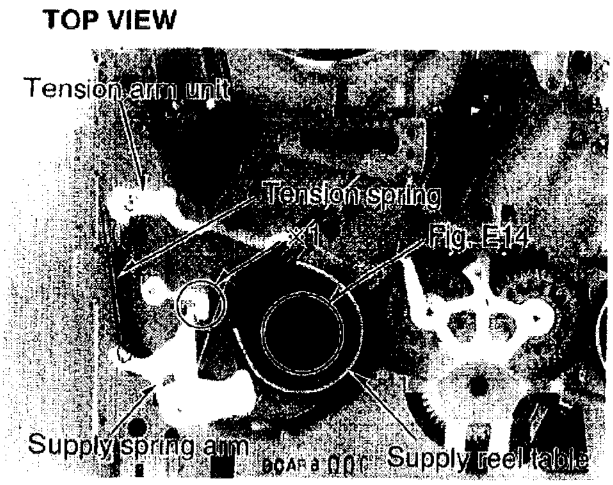

TOP VIEW
Tension arm unit
Tension spring
※1
Fig. E14
Supply spring arm
Supply reel table

Fig. E12

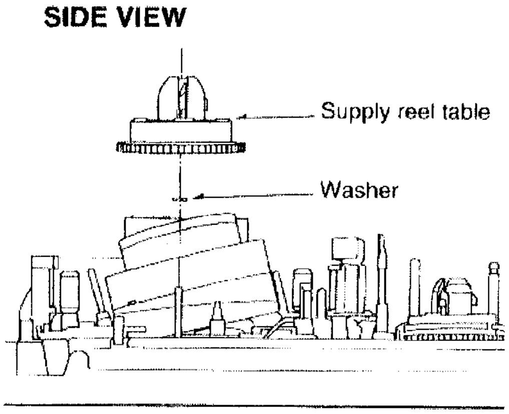

SIDE VIEW
Supply reel table
Washer

Fig. E13

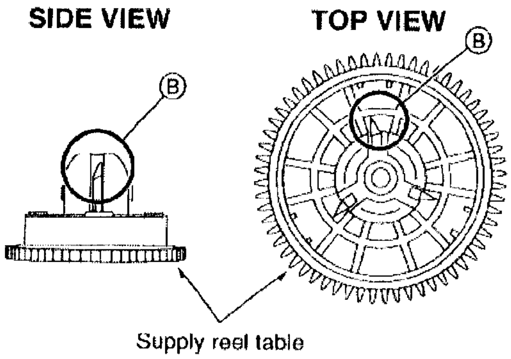

SIDE VIEW
TOP VIEW
Ⓑ
Ⓑ
Supply reel table

Fig. E14

(8) Assembly of Drive main lever arm

Install Drive main lever arm so that Drive main lever arm fits to the groove of Chassis.

And rotate Drive main lever arm to the clockwise in order to adjust the phase between the hole of the position fixture and the penetration hole of Chassis (Fig. E15).

TOP VIEW

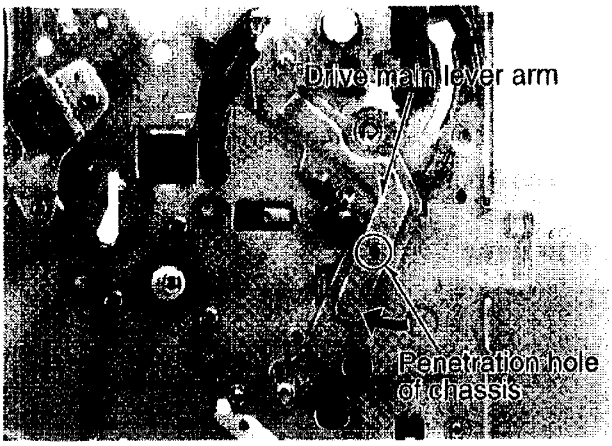

Drive main lever arm
Penetration hole of chassis

Fig. E15

(9) Assembly of Conversion lever A, P5 arm and Main lever

Install Conversion lever A and P5 arm (Fig. E16, E17).

Adjust the phase of Main lever so that Main lever fits the projection of Loading rack.

Main lever has to be locked at the projection of Chassis by 1 tab, and 2 tabs of Prism LED (Fig. E16).

※ Conversion lever A, P5 arm, Supply brake arm unit and the projection of Take-up brake arm have to be installed to the groove under the Main lever (Fig. E18).

TOP VIEW

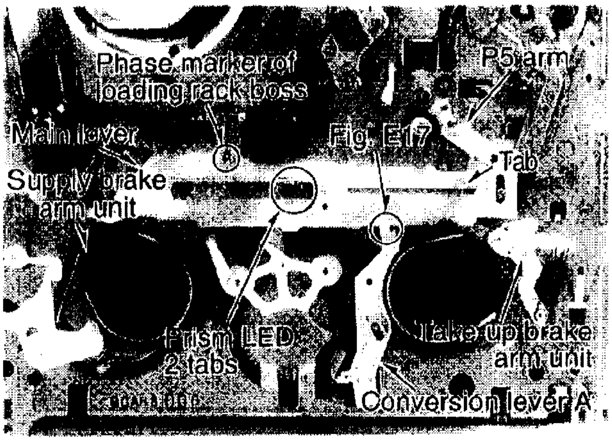

Phase marker of loading rack boss
P5 arm
Main lever
Fig. E17
Tab
Supply brake arm unit
Prism LED 2 tabs
Take-up brake arm unit
Conversion lever A

Fig. E16

TOP VIEW

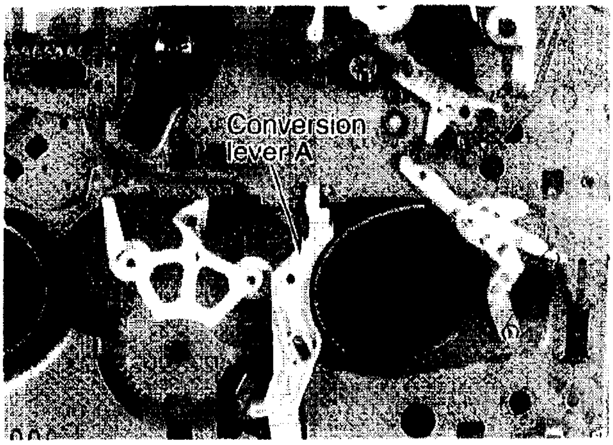

Conversion lever A

Fig. E17

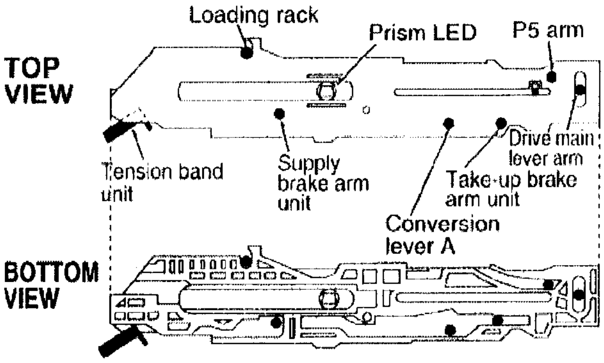

Loading rack
Prism LED
P5 arm
TOP VIEW
Drive main lever arm
Tension band unit
Supply brake arm unit
Take-up brake arm unit
Conversion lever A
BOTTOM VIEW

Fig. E18

(10) Assembly of Drive rack arm

Install Drive rack arm so that Drive rack arm fits the groove of Chassis and rotate it to the clockwise in order to fit the penetration hole of Chassis (Fig. E19).

TOP VIEW

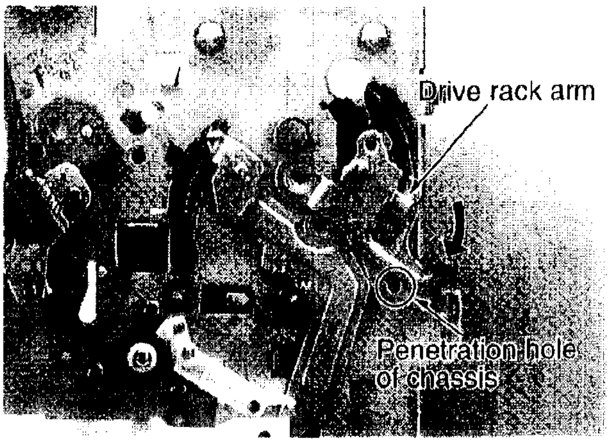

Drive rack arm
Penetration hole of chassis

Fig. E19

(11) Assembly of Main cam gear

Install Main cam gear so that Main cam gear fits the penetration hole of Chassis (Fig. E20) and fix it by the snap washer from the bottom of Chassis (Fig. E21).

TOP VIEW

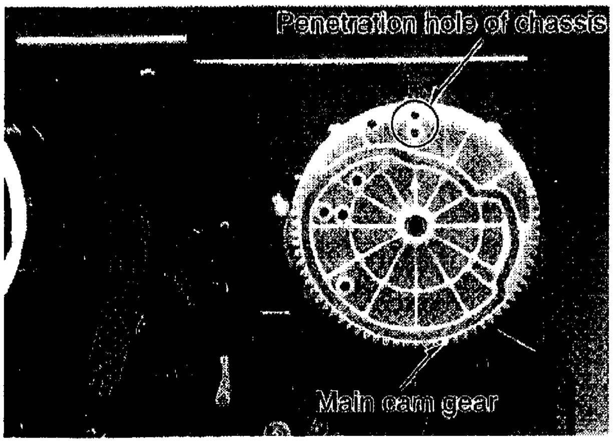

Penetration hole of chassis
Main cam gear

Fig. E20

BOTTOM VIEW

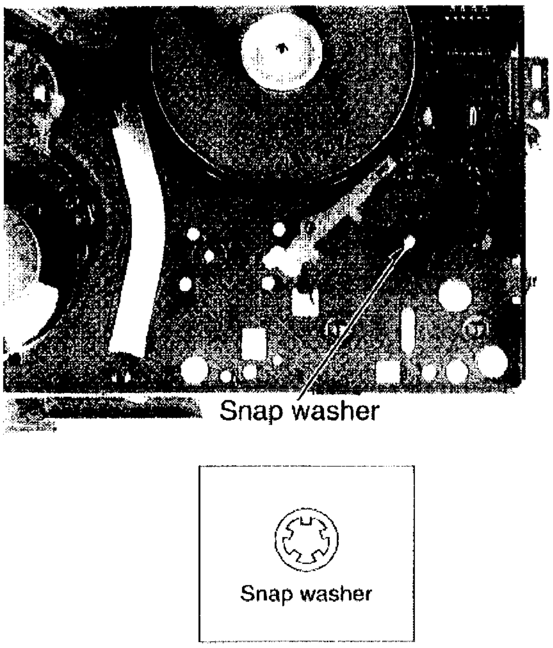

Snap washer
Snap washer

Fig. E21

(12) Assembly of Loading motor unit

Install Loading motor unit so that Loading motor unit fits the groove of Chassis (Fig. E22).

(13) Assembly of Pinch arm

Put Pinch arm together and install Opener piece to fix Pinch arm (Fig. E22).

TOP VIEW

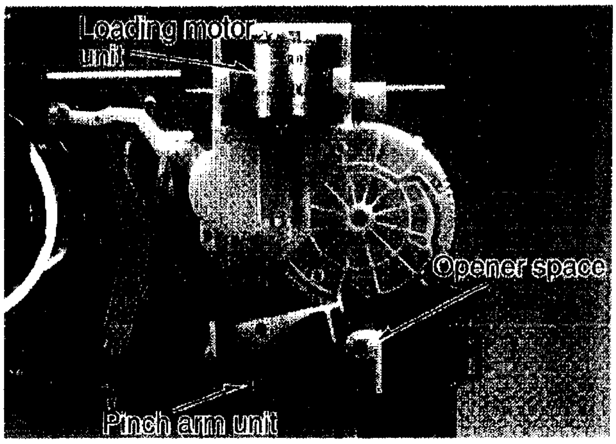

Loading motor unit
Opener space
Pinch arm unit

Fig. E22

4-3. Assembly of mechanism chassis

1. Assembly of Mechanism chassis

(1) Adjust the phase of Position switch in Main C.B.A..

Rotate Position switch until the click point. The projection of Position switch should be set to just above (Fig. F1).

TOP VIEW

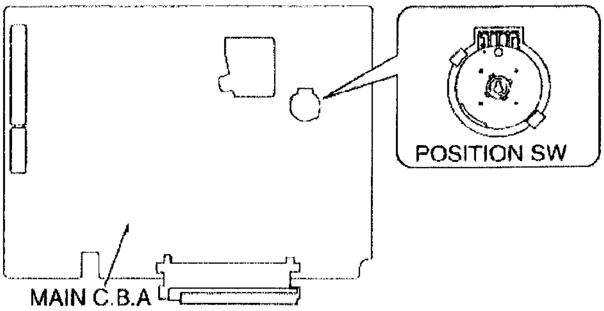

POSITION SW
MAIN C.B.A

Fig. F1

(2) Assembly of Mechanism chassis

Put Mechanism chassis on Main C.B.A. and fix it by 5 screws (3 red screws and 2 gold screws). Connect P3001, P2502 and P4002 (Fig. F2).

TOP VIEW

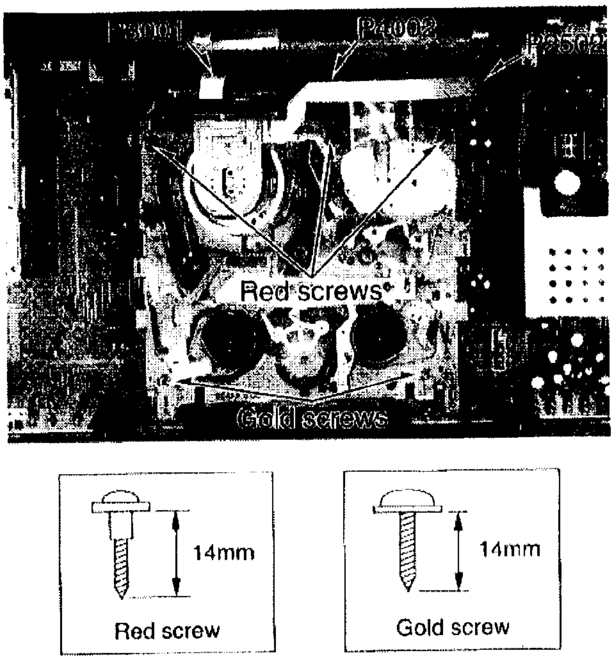

P3001
P4002
P2502
Red screws
Gold screws
14mm
Red screw
14mm
Gold screw

Fig. F2

※ The red screws has a gap among the chassis. Therefore be careful not to tighten too much.

2. Assembly of Cassette holder unit

(1) Assembly of Main shaft

Install Main shaft so that Main shaft fits the groove of Chassis (Fig. F3).

TOP VIEW

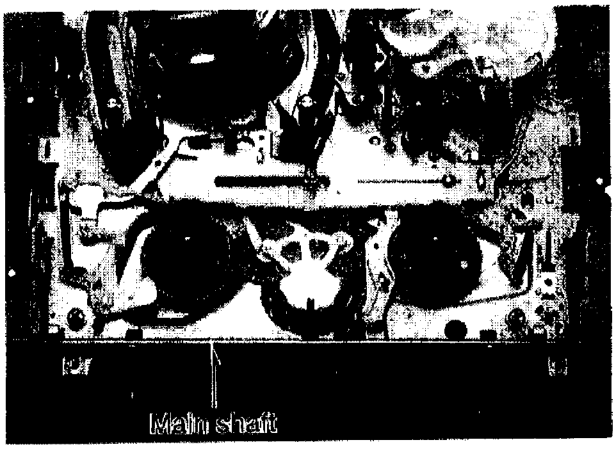


Fig. F3

(2) Assembly of Left & Right side plate

Install Left side plate so that Left side plate fits the groove of Chassis and fix it by the red screws.

After adjustment the phase of waper arm and Drive rack (Fig. F5), install Right side plate so that Right side plate fits the groove of Chassis and fix it by 2 red screws. Hang connection spring on the projection of Drive rack arm (Fig. F4, F5).

TOP VIEW

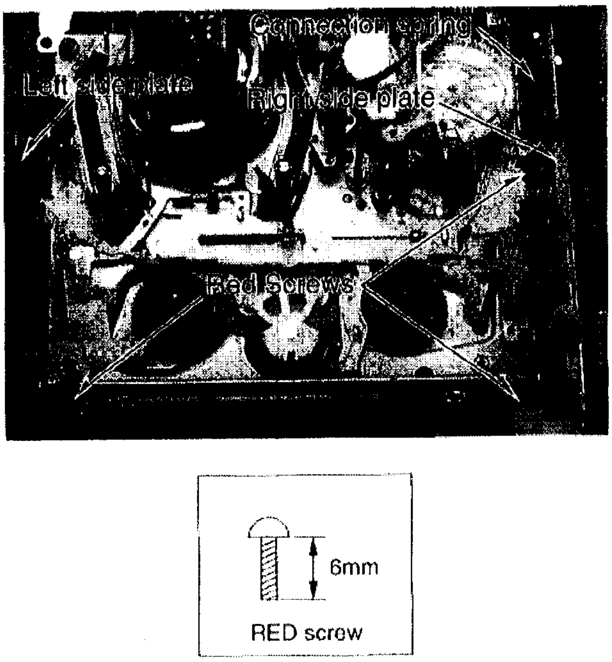

Connection spring
Left side plate
Right side plate
Red Screws
6mm
RED screw

Fig. F4

SIDE VIEW

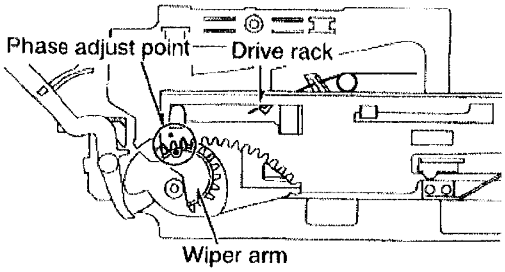

Phase adjust point
Drive rack
Wiper arm

Fig. F5

TOP VIEW

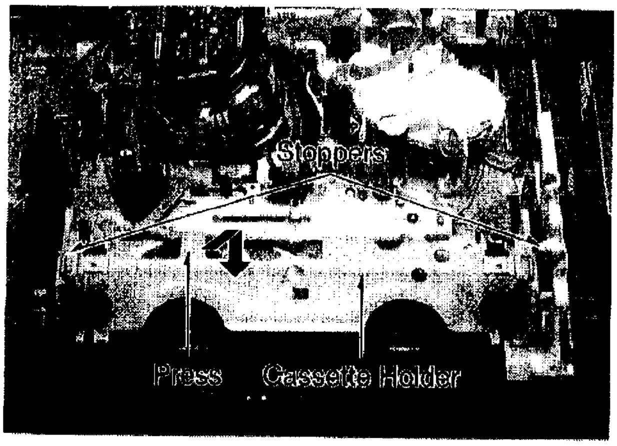

Stoppers
Press
Cassette Holder

Fig. F6

(3) Assembly of Cassette holder

Install Cassette holder so that Cassette holder fits the groove of Waper arm installed in Main shaft (Fig. F6, F7).

TOP VIEW

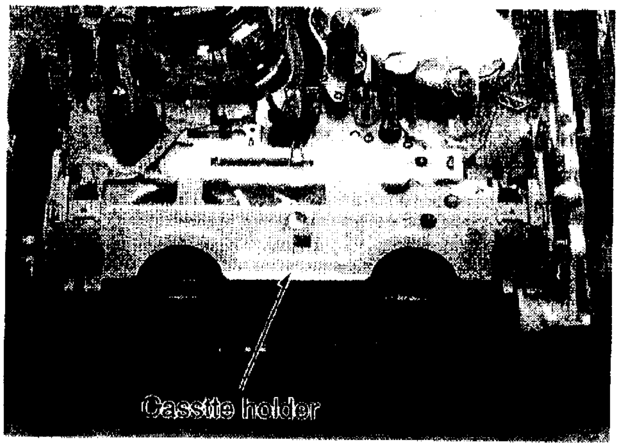

Cassette holder

Fig. F7

(4) Assembly of Top plate

Install Top plate so that Top plate fits the groove of Left and Right side plate.

※ Fix Top plate by tightening screw when the tabs of Left and Right side plate broke (Fig. F8).

TOP VIEW

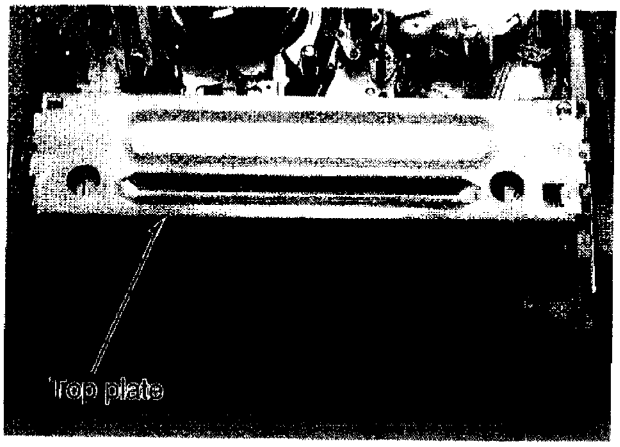
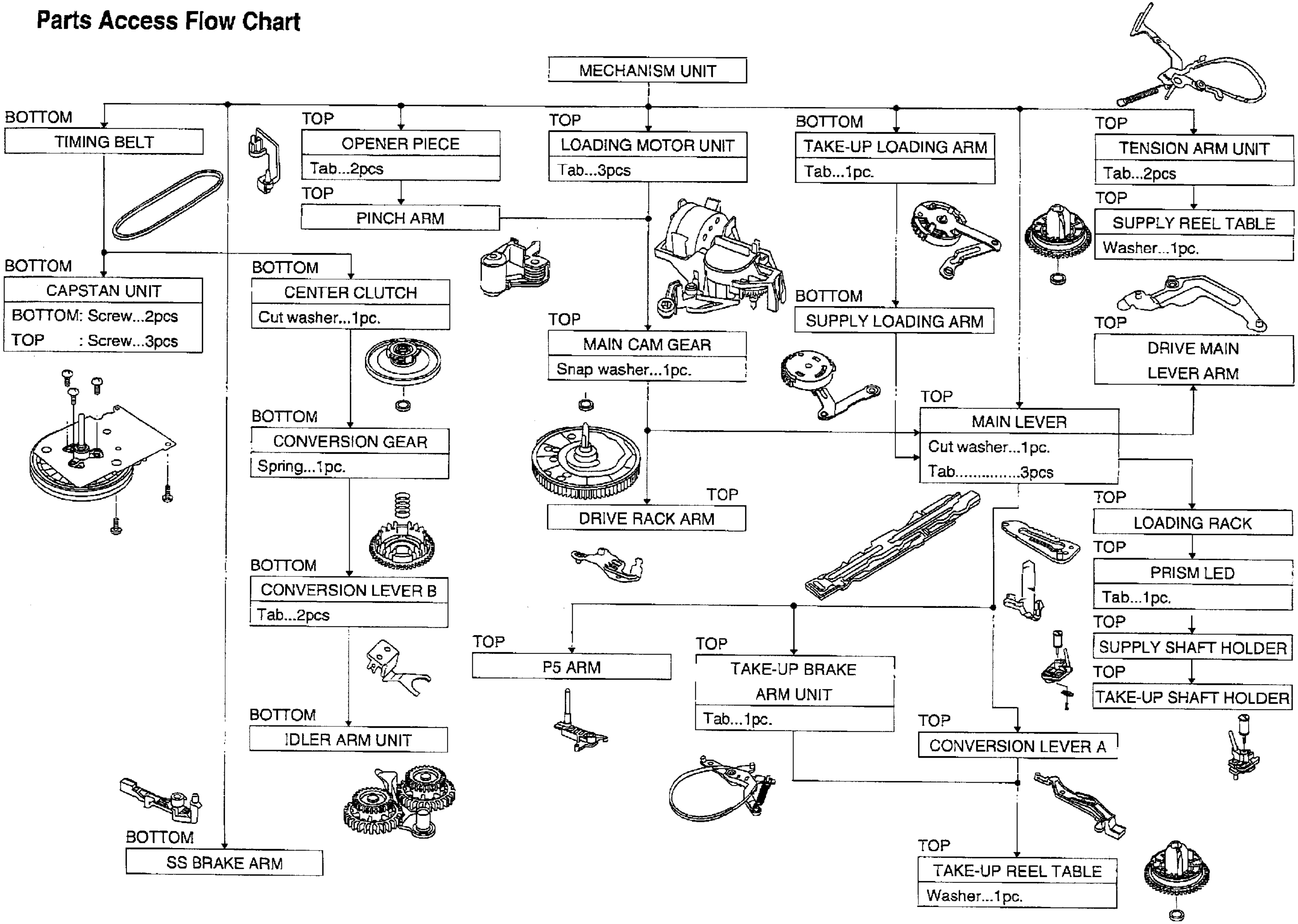


Fig. F8

(5) Install Front panel unit and Top panel

Parts Access Flow Chart


MECHANISM UNIT
BOTTOM
TIMING BELT
TOP
OPENER PIECE
Tab...2pcs
TOP
PINCH ARM
TOP
LOADING MOTOR UNIT
Tab...3pcs
BOTTOM
TAKE-UP LOADING ARM
Tab...1pc.
TOP
TENSION ARM UNIT
Tab...2pcs
TOP
SUPPLY REEL TABLE
Washer...1pc.
BOTTOM
CAPSTAN UNIT
BOTTOM: Screw...2pcs
TOP : Screw...3pcs
BOTTOM
CENTER CLUTCH
Cut washer...1pc.
BOTTOM
SUPPLY LOADING ARM
TOP
MAIN CAM GEAR
Snap washer...1pc.
TOP
DRIVE MAIN LEVER ARM
BOTTOM
CONVERSION GEAR
Spring...1pc.
TOP
MAIN LEVER
Cut washer...1pc.
Tab...............3pcs
TOP
DRIVE RACK ARM
TOP
LOADING RACK
BOTTOM
CONVERSION LEVER B
Tab...2pcs
TOP
PRISM LED
Tab...1pc.
TOP
SUPPLY SHAFT HOLDER
TOP
P5 ARM
TOP
TAKE-UP BRAKE ARM UNIT
Tab...1pc.
TOP
TAKE-UP SHAFT HOLDER
BOTTOM
IDLER ARM UNIT
TOP
CONVERSION LEVER A
BOTTOM
SS BRAKE ARM
TOP
TAKE-UP REEL TABLE
Washer...1pc.

5. MECHANICAL ADJUSTMENT PROCEDURE

5-1. Tension post position adjustment

Equipment required: Hex. Wrench (VFK0326)
Specification: 50.5±1.5 mm

(1) Disconnect the AC plug.
(2) Remove the TOP PLATE.
(3) Turn the LOADING MOTOR until the loading completes.
(4) Adjust the hole of Tension Band Fastener by Hex Wrench until the distance between the Tension Post and the center of Supply reel table is 50.5±1.5 mm as shown in Fig. M1.

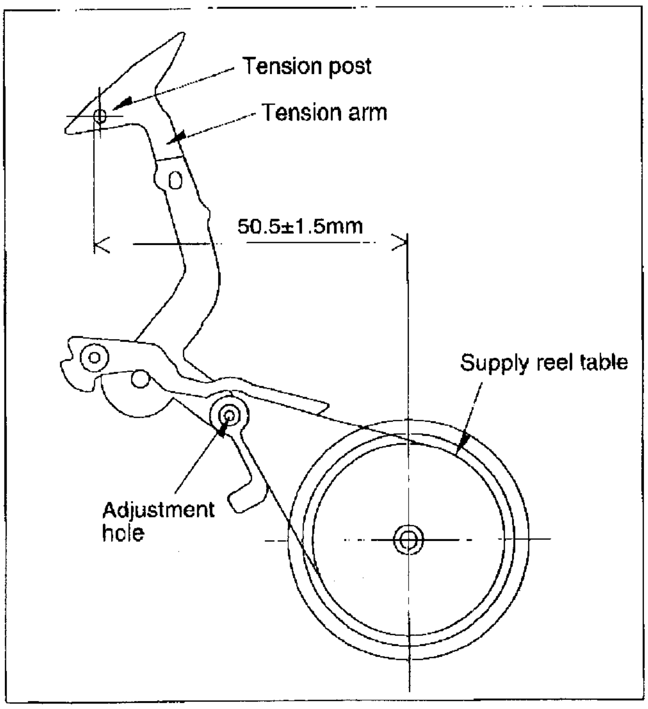

Tension post
Tension arm
50.5±1.5mm
Supply reel table
Adjustment hole

Fig. M1

5-2. Back tension adjustment

Equipment required:
Back Tension Meter (VFK0132)
VHS Cassette tape (180 minutes tape: PAL)
VHS Cassette tape (120 minutes tape: NTSC)
Specification: 22.5–27.5g

(1) Playback the cassette tape from the beginning and wait until the tape movement get the stabilization. (for approx. 10–20 seconds)
(2) Insert the Back Tension Meter into the path of a tape, and measure the back tension to be within specification as shown in Fig. M2.

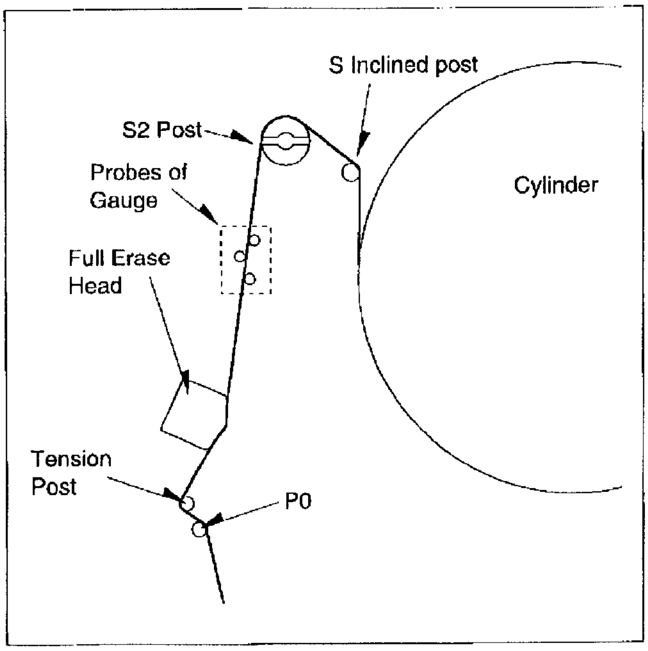

S Inclined post
S2 Post
Probes of Gauge
Full Erase Head
Cylinder
Tension Post
P0

Fig. M2

(3) If it is out of specification, change the spring notch as shown in Fig. M3.

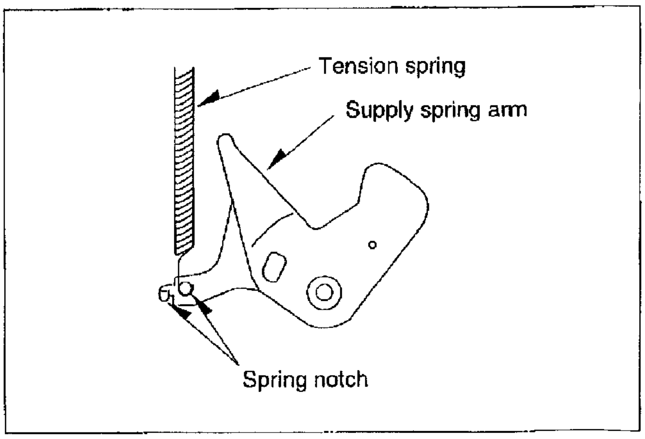

Tension spring
Supply spring arm
Spring notch

Fig. M3

5-3. P2 and P3 posts adjustment (PREADJUSTMENT)

Equipment Required:
Post Adjustment Screwdriver (VFK0329)

(1) Remove the Top Plate.

(2) Turn the Loading Motor until the unloading completes.

(3) Rotate the P2 and P3 Posts clockwise to the end. (Fig. M4)

(4) Rotate the P2 and P3 Posts twice counterclockwise. (Fig. M4)

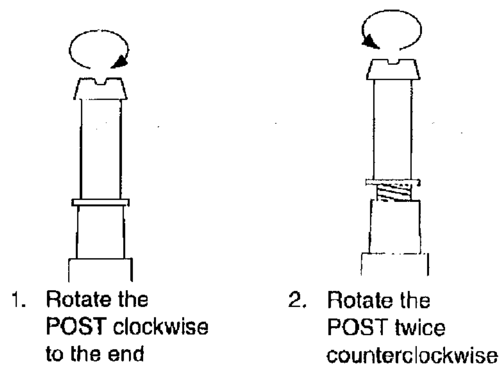

1. Rotate the POST clockwise to the end
2. Rotate the POST twice counterclockwise

Fig. M4

(5) Playback the cassette tape and make sure that the edges of the tape are not curling at the bottom or top end of the P2, P3, and P4 Posts as shown in Fig. M5.

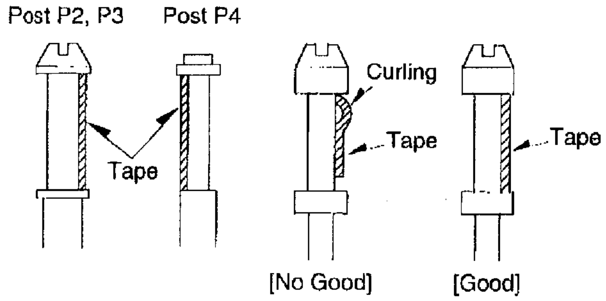


Fig. M5

(6) If the curling appears, readjusts the P2 and P3 Posts.

5-4. Tape interchangeability adjustment

Carry out the following procedures for Tape Interchangeability Adjustment to do it correctly and smoothly.

(1) P2 AND P3 POSTS ADJUSTMENT
(2) ADJUSTMENT OF P4 POST
(3) HEIGHT ADJUSTMENT OF A/C HEAD
(4) FINE-ADJUSTMENT OF A/C HEAD
(5) ADJUSTMENT OF X-VALUE (PREADJUSTMENT)
(6) FINE-ADJUSTMENT OF X-VALUE

If the Tape Interchangeability Adjustment is not perfect, repeat the above procedures from (1) to (6).

CAUTIONS: To make an Adjustment Mode for Tape Interchangeability, press the FF and EJECT buttons simultaneously 3 times to set the Service Mode 2.

In case of VCR mounted shuttle ring, turn the shuttle ring to FF and then press EJECT button.

In Loewe model, STOP button is used instead of FF button.

NOTE: Cleaning the Tape Transport path before adjusting of Tape Interchangeability. The detail portion is shown below.
P0 Post, Tension Posts, FE Head, P2 Post, Supply Inclined Post, Cylinder Unit, Take-up Inclined Post, P3 Post, A/C Head, P4 Post, Pinch Roller, Capstan Shaft, P5 Post. FE Head, Cylinder Unit, A/C Head and Capstan Shaft are more important parts and pay an attention to clean them.

5-4-(1). P2 AND P3 POSTS ADJUSTMENT

Equipment required:
Alignment Tape (PAL/SECAM: VFJ8125H3F)
(NTSC: VFM8080HQFP)
Post Adjustment Screwdriver (VFK0329)

(1) Connect the oscilloscope to the output of the Head Amp as shown in Fig. M6.

NOTE: To get a stable waveform of the Head Amp output (observation point TW3001 and TW2001 located on Main C.B.A.) on the oscilloscope, use the head switching pulse as a triggering signal as shown in Fig. M6.

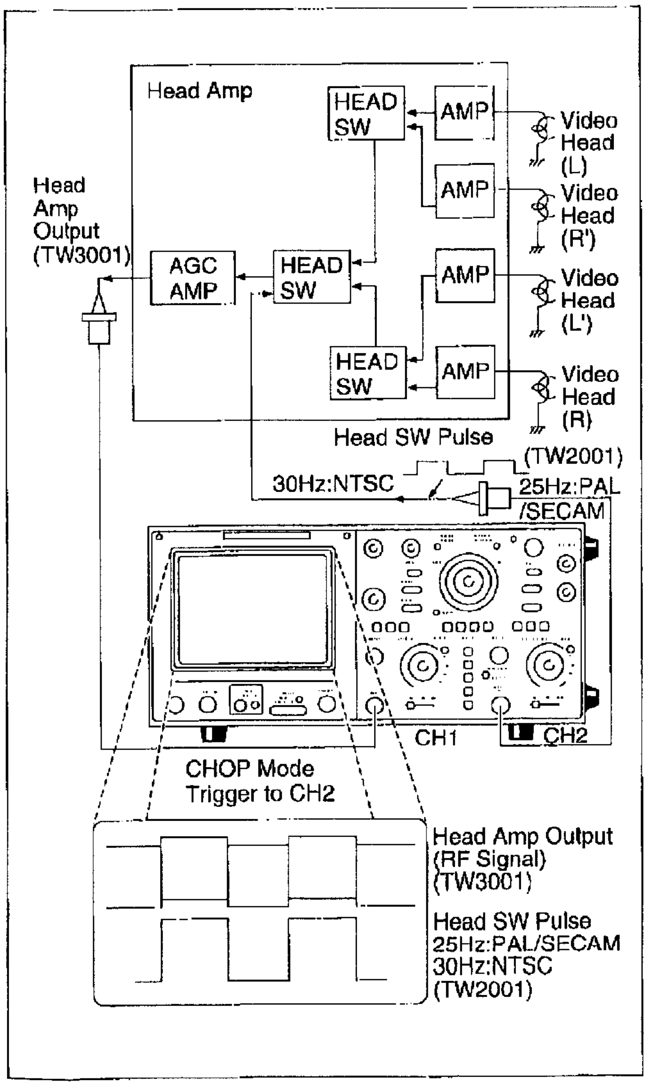

Head Amp
HEAD SW
AMP
Video Head (L)
AMP
Video Head (R')
Head Amp Output (TW3001)
AGC AMP
HEAD SW
AMP
Video Head (L')
HEAD SW
AMP
Video Head (R)
Head SW Pulse
(TW2001)
30Hz:NTSC
25Hz:PAL /SECAM
CH1
CH2
CHOP Mode
Trigger to CH2
Head Amp Output (RF Signal) (TW3001)
Head SW Pulse 25Hz:PAL/SECAM 30Hz:NTSC (TW2001)

Fig. M6 Connect of Oscilloscope

(2) Playback the Alignment Tape.

(3) If the RF envelope appears like example "A" or "B" in Fig. M7, then adjustment of the tape guide post (P2: Entrance) is necessary.

(4) Adjust the tape guide post (P2) with the post adjustment screwdriver so that the RF envelope waveform at the entrance portion becomes flat as shown in Fig. M7 "C".

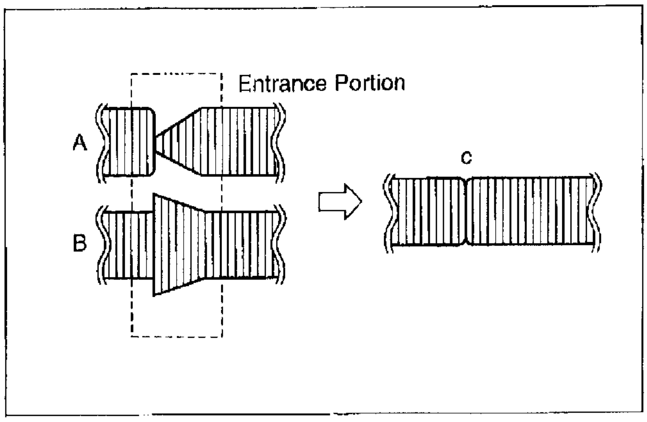

Entrance Portion
A
B
C

Fig. M7

(5) If the RF envelope appears like "D" or "E" in Fig. M8, then adjustment of the tape guide post (P3: Exit) is necessary.

(6) Adjust the tape guide post (P3) in the same manner as the P2 post so that the exit portion becomes flat as shown in Fig. M8 "F".

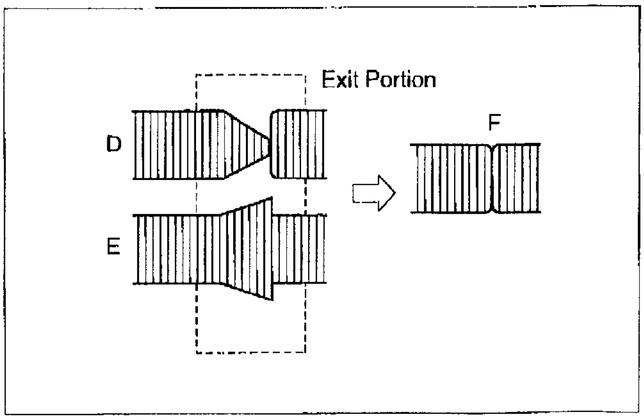

Exit Portion
D
E
F

Fig. M8

(7) Keep pressing the tracking up/down (∧ or ∨) buttons on the remote controller unit. The output envelope should vary nearly parallel with other condition as shown in Fig. M9.

(8) Set the tracking control into center fix position by pressing the tracking up/down (∧ and ∨) simultaneously and adjust for maximum RF envelope, whilst being as flat as possible.

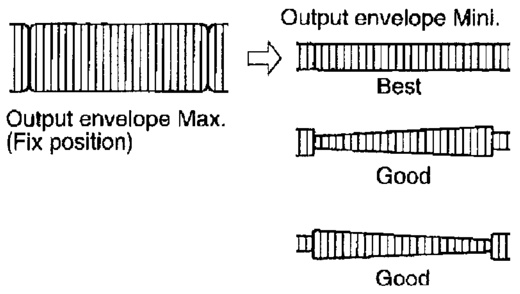


Fig. M9

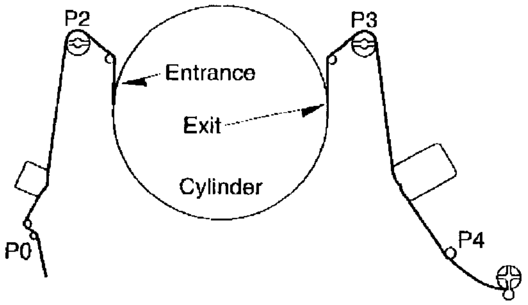


Fig. M10 Loading of Posts

5-4-(2). ADJUSTMENT OF P4 POST

(1) Install A/C Head on the Mechanism Chassis by one screw.

(2) Playback the Alignment Tape.

(3) Rotate the screw (A) or (B) until the wrinkle appears on the lower edge of tape at P4 Post.

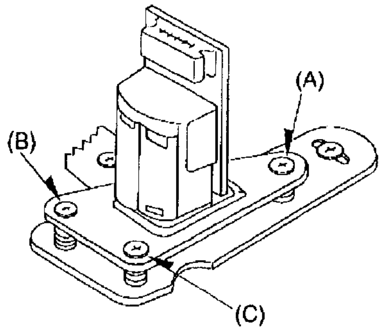
(4) Rotate the screw (A) or (B) until the wrinkle just disappears on the lower edge of tape at P4 Post.

(5) Connect the oscilloscope to audio output terminal.

(6) Rotate the screw (C) until audio signal is maximized.

NOTE: 1. The relation between the rotation direction of screws (A) and (B) and the condition of wrinkle on the lower edge at P4 Post as shown in Fig. M11.

2. Make sure that there is not the inclined wrinkle between P4 Post and Pinch Roller.



	SCREW (A)	SCREW (B)
So wrinkle appears on the lower edge of tape	COUNTER CLOCKWISE	CLOCKWISE
So wrinkle disappears on the lower edge of tape	CLOCKWISE	COUNTER CLOCKWISE

Fig. M11

5-4-(3). HEIGHT ADJUSTMENT OF A/C HEAD

<When moving the A/C Head up>

(1) Rotate the screw (A) counterclockwise until the wrinkle appears on the lower edge of tape at P4 Post.

(2) Rotate the screw (B) counterclockwise until the wrinkle just disappears on the lower edge of tape at P4 post.

(3) Rotate the screw (C) counterclockwise until the audio signal is maximized.

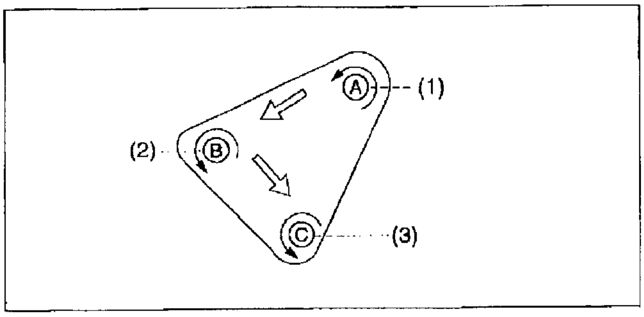


Fig. M12

<When moving the A/C Head down>

(1) Rotate the screw (B) clockwise until the wrinkle appears on the lower edge of tape at P4 Post.

(2) Rotate the screw (A) clockwise until the wrinkle just disappears on the lower edge of tape at P4 post.

(3) Rotate the screw (C) clockwise until the audio signal is maximized.

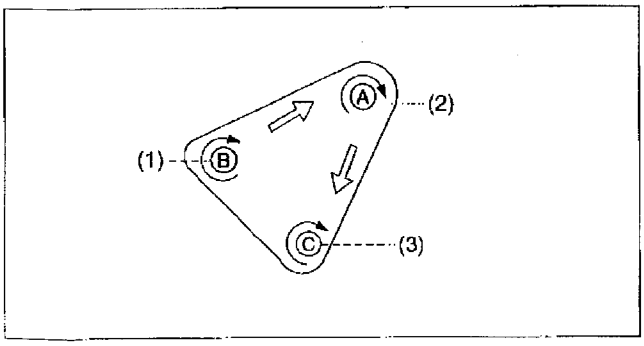


Fig. M13

5-4-(4). FINE-ADJUSTMENT OF A/C HEAD

(1) Connect the oscilloscope to the output of the Head Amp as shown in Fig. M6.

(2) Playback the Alignment Tape.

(3) Make sure that the condition of the wrinkle at P4 Post. If the condition of the wrinkle is out of specification, P4 Post adjustment has to be performed as follows.

Turn the screw (A) counterclockwise until the wrinkle appears on the lower edge of tape at P4 Post.

Turn the screw (A) clockwise until the wrinkle disappears on the lower edge of tape at P4 Post.

(4) Turn the screw (C) until the audio signal is maximized.

NOTE: Make sure that the audio output does not increase when push the upper and lower edges of tape around A/C Head.

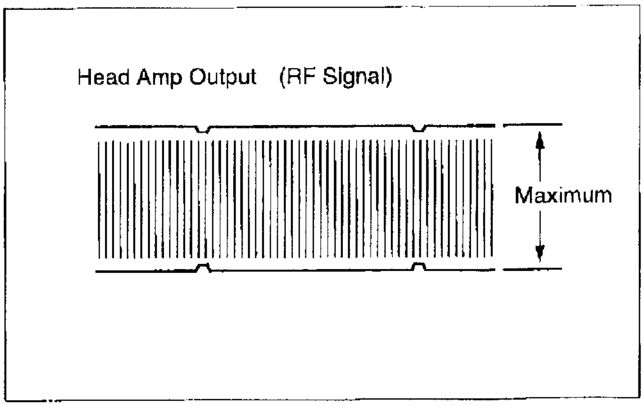


Fig. M14

5-4-(5). ADJUSTMENT OF X-VALUE (PREADJUSTMENT)

Equipment required:
Fine Adjustment Gear Drive (VFK0330)
Specification: Less than 15 msec.

(1) Connect the oscilloscope to the audio output and the video output. Both output signals should be fixed by the external trigger.

(2) Playback the Alignment Tape and set the tracking control into center fix position.

(3) Adjust A/C Head position by the Fine Adjustment Gear Driver (VFK0330) to meet the signal fault portion of the audio output and the video output signals (Less than 15 msec.).

(4) After meeting the signal fault portion, adjust A/C Head position by the Fine Adjustment Gear Driver (VFK0330) until the video envelope is maximized.

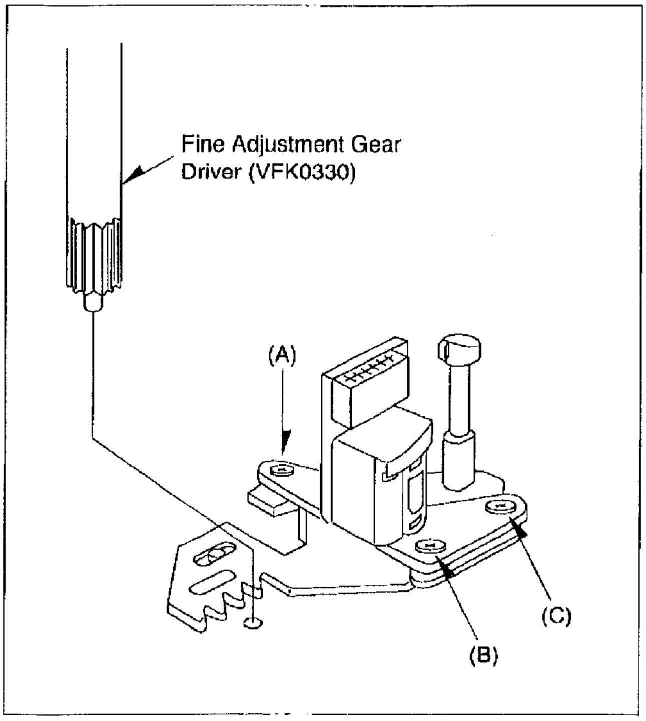


Fig. M15

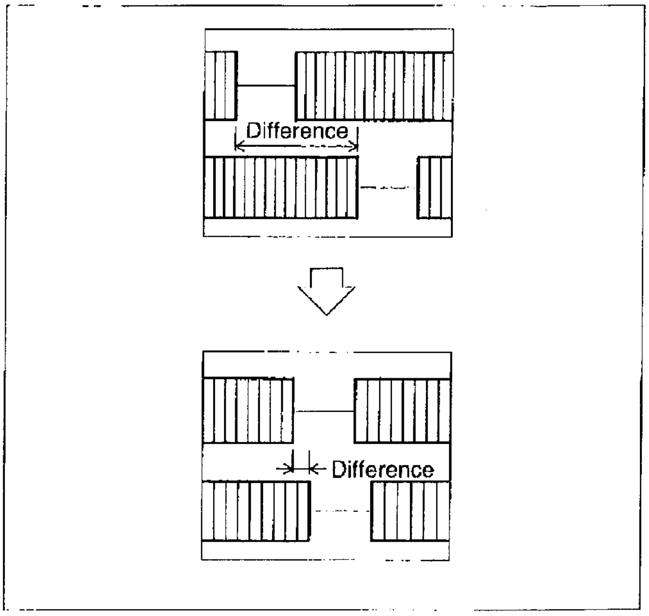


Fig. M16

5-4-(6). FINE-ADJUSTMENT OF X-VALUE

Equipment required:
Fine Adjustment Gear Drive (VFK0330)

(1) Connect the oscilloscope to the audio output and the video output. Both output signals should be fixed by the external trigger.

(2) Playback the alignment tape and set the tracking control into center fix position.

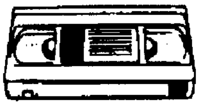
(3) Adjust A/C Head position by the Fine adjustment Gear Driver (VFK0330) until the video envelope level is maximized at the tracking center fix position.

NOTE: During X-Value Fine Adjustment, in case the video envelope level became 0, Preadjustment of X-value should be adjusted again due to it is possibility to vary the X-value adjustment.

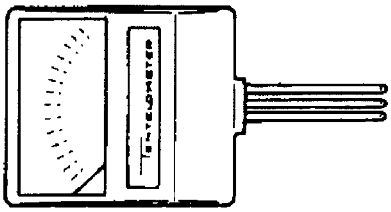
Servicing Fixtures & Tools

VFJ8125H3F
PAL VHS Alignment Tape

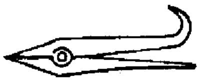
VFM8080HQFP
NTSC VHS Alignment Tape



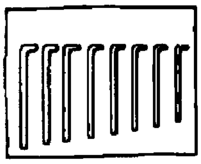
VFK0132
Back Tension Meter
(Tentelometer, Made in U.S.A.)



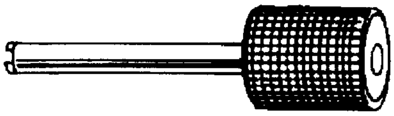
VFK0335
Retaining Ring Remover
(3mm/4mm)



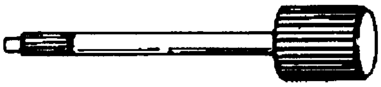
VFK0326
Hex. Wrench Set
(0.7, 0.9, 1.2, 1.5, 1.6, 2.0, 2.4, 3.0mm)



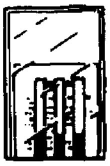
VFK0329
Post Adjustment Screwdriver



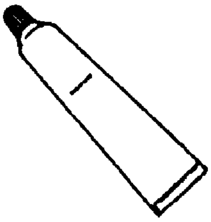
VFK0330
Fine Adjustment Gear Driver



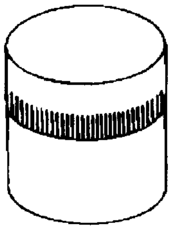
VFK27
Hand Cleaning Stick



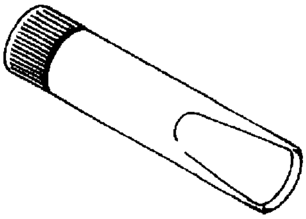
VFK1024
Morlytone Grease



VFK1298
Floil Grease



VFK1301
Silicone Grease



6. SELF-TEST INDICATION DISPLAY

This VTR has a self-diagnosis and display function. If the VTR detects trouble during installation or during use, one of the following fault indication codes will automatically appear in the VTR display. Fault indication codes are displayed in the form of a single English letter followed by two numbers, as for example "H01".

Note:

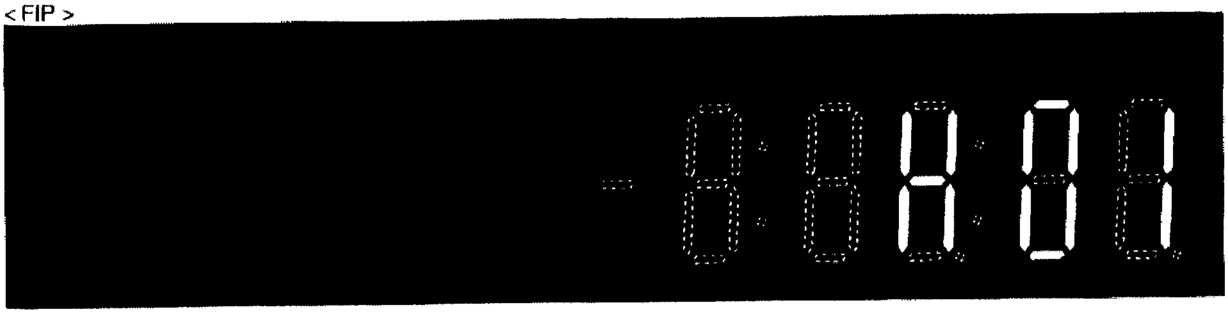
1. The indication "U" is displayed on the FIP while power remains on.
2. Otherwise, the indication "H" or "F" is displayed on the FIP, and the power is automatically turned off.

   When the power is turned on again, the fault indication code will disappear and the unit will retrun to normal display mode (either clock or counter is displayed).
3. This fault indication code will be stored in the microprocessor even with the AC plug disconnected.

   The two-digit number portion of the stored fault indication code can be redisplayed in the FIP's "second" display portion (the last 2 digits on the light) by placing the unit is Service Mode Number 2 when turning on Service Information Display as for example "01" or "02" etc.

   If a second error occurs, only the most recent error will be displayed and stored.
4. To erase the stored fault indication code data, press FF and EJECT buttons for 5 seconds.

<FIP >



INDICATION	CAUSE	REMEDY/CHECK
U 10	Dew formation.	Wait until the indication disappears.
H 01	After cylinder lock is detected, the cylinder does not start rotating again even after tape unloading.	Check the cylinder unit and the cylinder motor drive circuit.
H 02	Cassette tape is not wound up during tape unloading except Eject mode.	Check the capstan unit and the capstan motor drive circuit.
F 03	Mechanism locks during mode transition except Eject mode.	1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment. 3. Check the mode switch.
F 04	Mechanism locks during tape unloading.	1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment.
F 06	Mechanism locks after tape unloading in Eject mode.	1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment for cassette holder unit.
F 07	During recording mode recording signal is less than the normal condition.	Protection of the overcurrent flowing in transistor which produce the power supply for recording mode.
F 08	Recording circuit works except recording mode.	Check the recording circuit.
H 16	Cylinder lock detection.	Check the cylinder unit and the cylinder motor drive circuit.
H 17	Supply reel mechanism lock detection.	Check the supply reel mechanism and the supply reel circuit.
H 18	Take-up reel mechanism lock detection.	Check the take-up reel mechanism and the take-up reel circuit.

Fig. T1 Self-Test indication Display

7. SERVICE INFORMATION DISPLAY

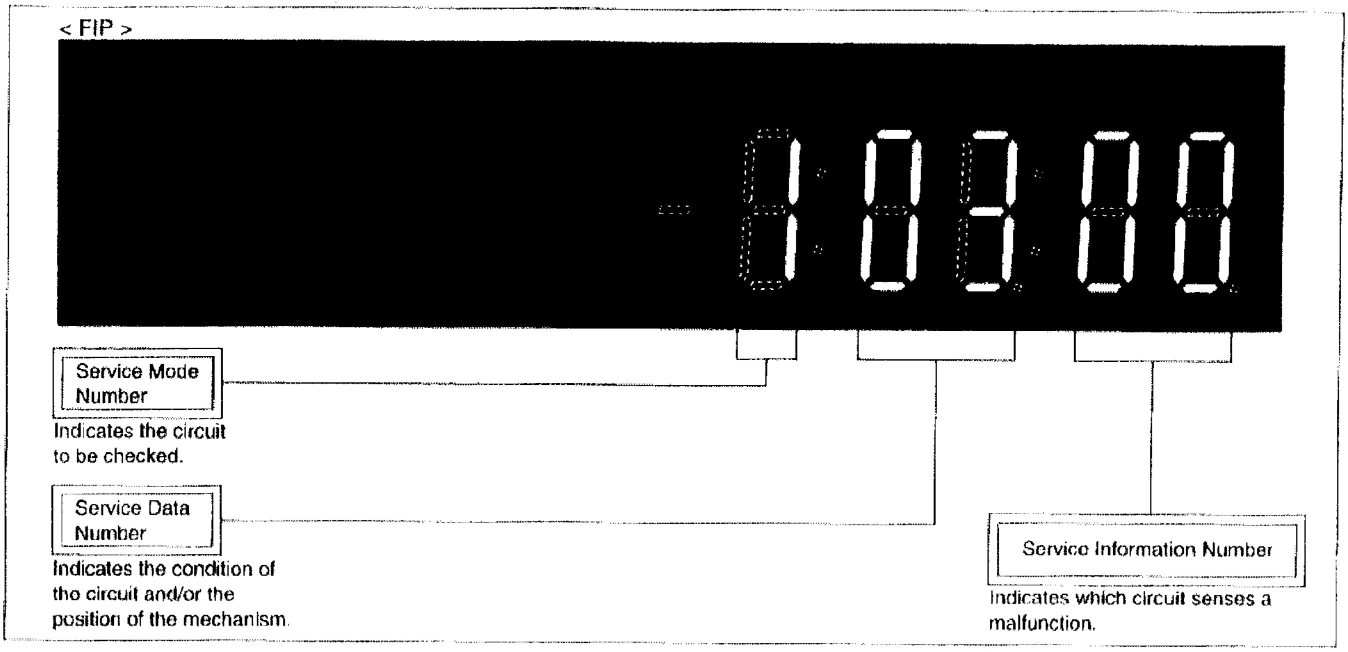

< FIP >
Service Mode Number
Indicates the circuit to be checked.
Service Data Number
Indicates the condition of the circuit and/or the position of the mechanism.
Service Information Number
Indicates which circuit senses a malfunction.

Fig. D1 Service Information Display

7-1. Purpose of Service Information Display

This information aids trouble shooting by indicating the source of the malfunction. The service mode number & service data number are used by the technician during repair while the service information can be used by consumer to diagnose malfunctions allowing the technician to provide a more accurate repair cost estimate and reduce repair time.

7-2. Turning on Service Information Display

Press FF and EJECT buttons simultaneously for more than 3 seconds. In case of VCR mounted shuttle ring, turn the shuttle ring to FF and then press EJECT button for more than 3 seconds.

In Loewe model, STOP button is used instead of FF button.

In the Service Information Display, there are four digits divided into 3 functions.

The first digit indicates which of the 7 service modes that the unit is currently in.

MODE 1: Checks tape protection circuit.

MODE 2: Checks tape transport mechanism.

MODE 3: Checks mode switching operation.

MODE 4: Checks control buttons.

MODE 5: Checks capstan motor.

MODE 6: Checks cylinder motor.

MODE 7: Checks loading/unloading operation.

The second and third digits are service data which indicate the condition of the circuit or mechanism being checked.

The forth digit is the service infromation display. it is to be used by the consumer to help determine the source of a malfunction. The service information display operates independently of the service modes and stores the fault indication in memory for as long as AC power is not supplied.

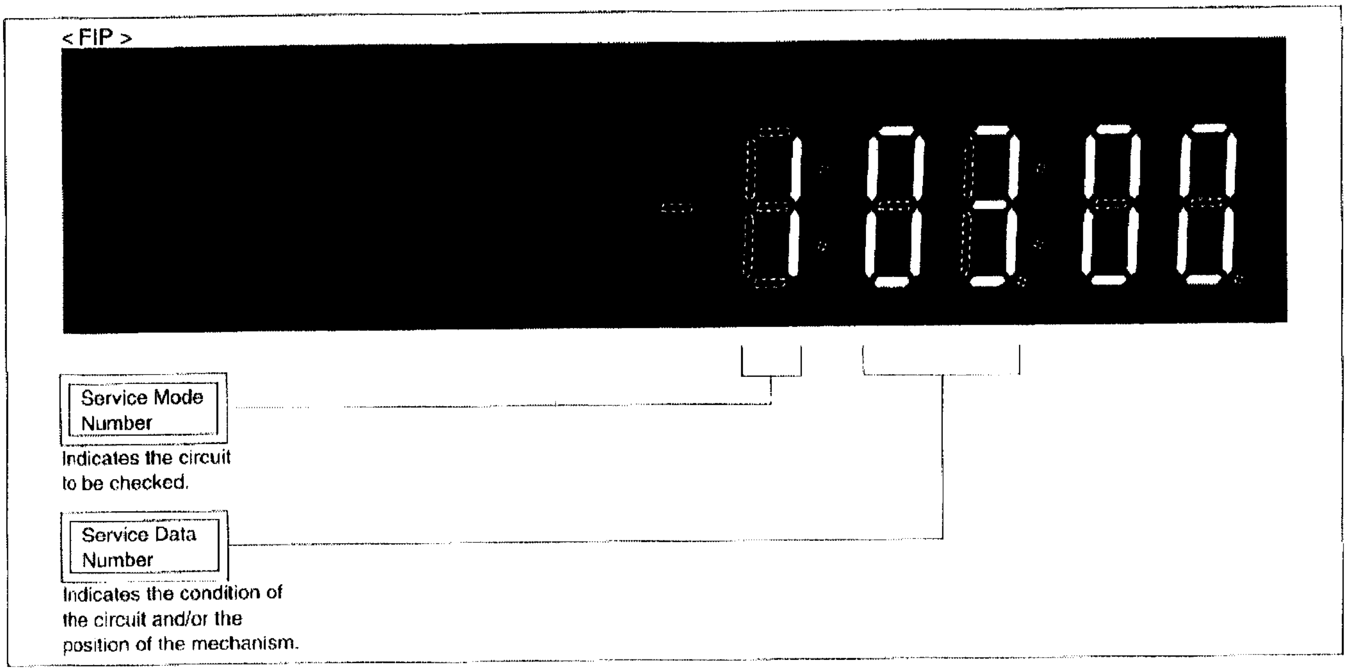

< FIP >
1 03 00
Service Mode Number
Indicates the circuit to be checked.
Service Data Number
Indicates the condition of the circuit and/or the position of the mechanism.

Fig. D2 Service Mode Number and Service Data Number on F.I.P.

7-3. Use of Service Modes

(1) Turn on Service information Display.

(2) To change Service Modes, press FF and EJECT buttons simultaneously.

(3) Mode 0: Storing the process number when the fault happened.

(4) Mode 1: Checks that the sensor LED, Supply & Take-up sensor circuits checks the circuits by blocking the light from the sensor LED to either or both Supply & Take-up Sensors. When the light is blocked to both sensors, "00" should be indicated on the service data number.
When the light is blocked to the supply sensor, "01" should be indicated.

(5) Mode 2: Checks the mode switch circuit while indicating mechanism position.
Service Data Numbers indicate the position of the mode switch and there by the mechanism position.

(6) Mode 3: Checks that mode switch circuit operations have been completed.
Service Data Number should indicate "00" after each mechanism operation is completed.

(7) Mode 4: Checks the operation circuit.
Indicates if SYSTEM CONTROL IC receives the operating commands from the mode buttons and/or remote controller.

(8) Mode 5: Checks the capstan motor circuit.
Indicates if the SYSTEM CONTROL IC has received the command to rotate the capstan motor.

(9) Mode 6: Checks the cylinder motor circuit.
SYSTEM CONTROL IC has received the command to rotate the cylinder motor.

(10) Mode 7: Checks the loading/unloading operation.
The loading motor rotates for loading operation when the "PLAY" button is pressed.
The loading motor rotates for unloading operation when the "STOP" button is pressed.
This mode can be displayed indefinitely until the OPERATE button is pressed.

<NOTE> Refer to Fig. D5 for details of Service Data Numbers.

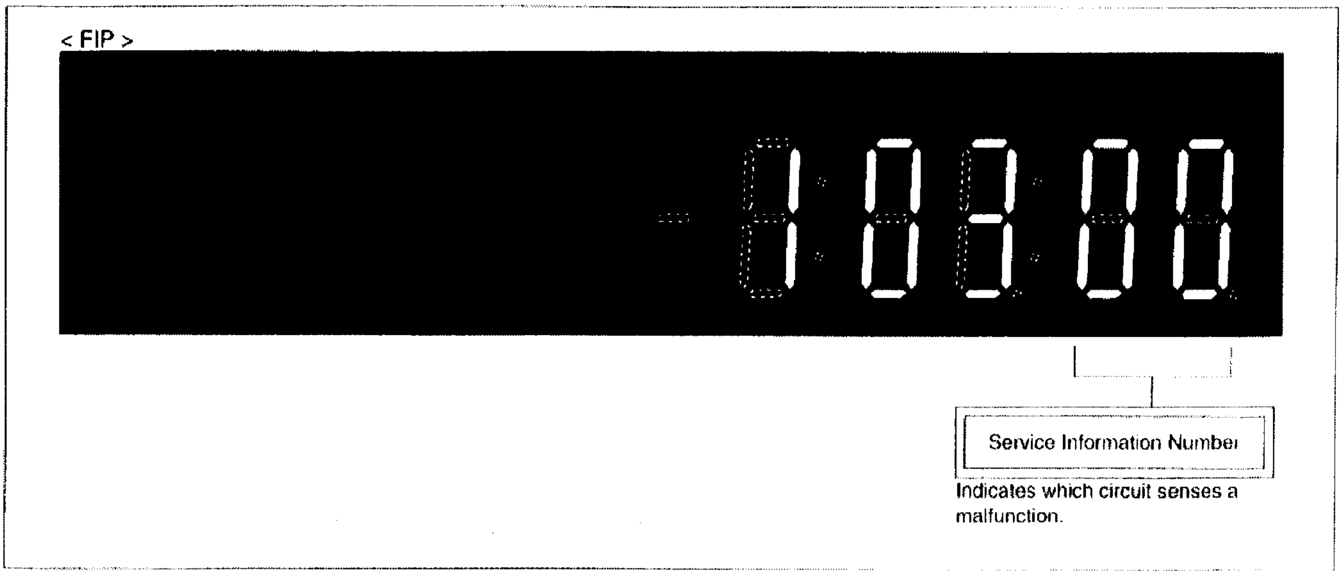

< FIP >
1 03 00
Service Information Number
Indicates which circuit senses a malfunction.

Fig. D3 Service Information Number on F.I.P.

7-4. Service Information Number

Refer to Fig. D4 for details of Service Infromation Number.

NOTE: The Service Information Number display is independent of the service mode display. The Service Information Number will be stored as long as AC power is not supplied. (If can be displayed in the Service Mode 2.)

If a second error occurs, only the most recent error will be displayed.

Service Information Number	Malfunction
00	Normal condition (No problem)
10	Dew formation
01	Cylinder stop
02	Tape reel stop
03	Stop at position other than 04 or 06
04	Stop during unloading
06	Stop during Cassette-in/Eject operation
07	Recording circuit stop in recording mode.
08	Recording circuit stop except recording mode.
16	Cylinder lock
17	Supply reel lock
18	Take-up reel lock
2*	PG shifter automatic adjustment error

Fig. D4 Detail Service Information Number

7-5. Test Mode

When the test terminals are shorted during turning off condition, the following operation will be performed after AC power is applied. Test Mode Information will be displayed on FIP insted of linear counter. To release Test mode, test Terminales should be opened.

(1) Power will be turned on automatically when AC power is applied.

(2) The direct operation of buttons are able to be performed.
(Examle) PLAY⟷REC, REC→EJECT, REC→FF/REW

(3) In case the mechanism is in PLAY position, the mechanism goes into PLAY mode when AC power is applied.

(4) Playback CVC function is turned off.

(5) Tracking is fixed under power off and cassette in. Auto tracking does not perform.

(6) For recording current adjustment.

(7) For reverse slow tracking adjustment.

(8) When the power is turned off, tracking is fixed.

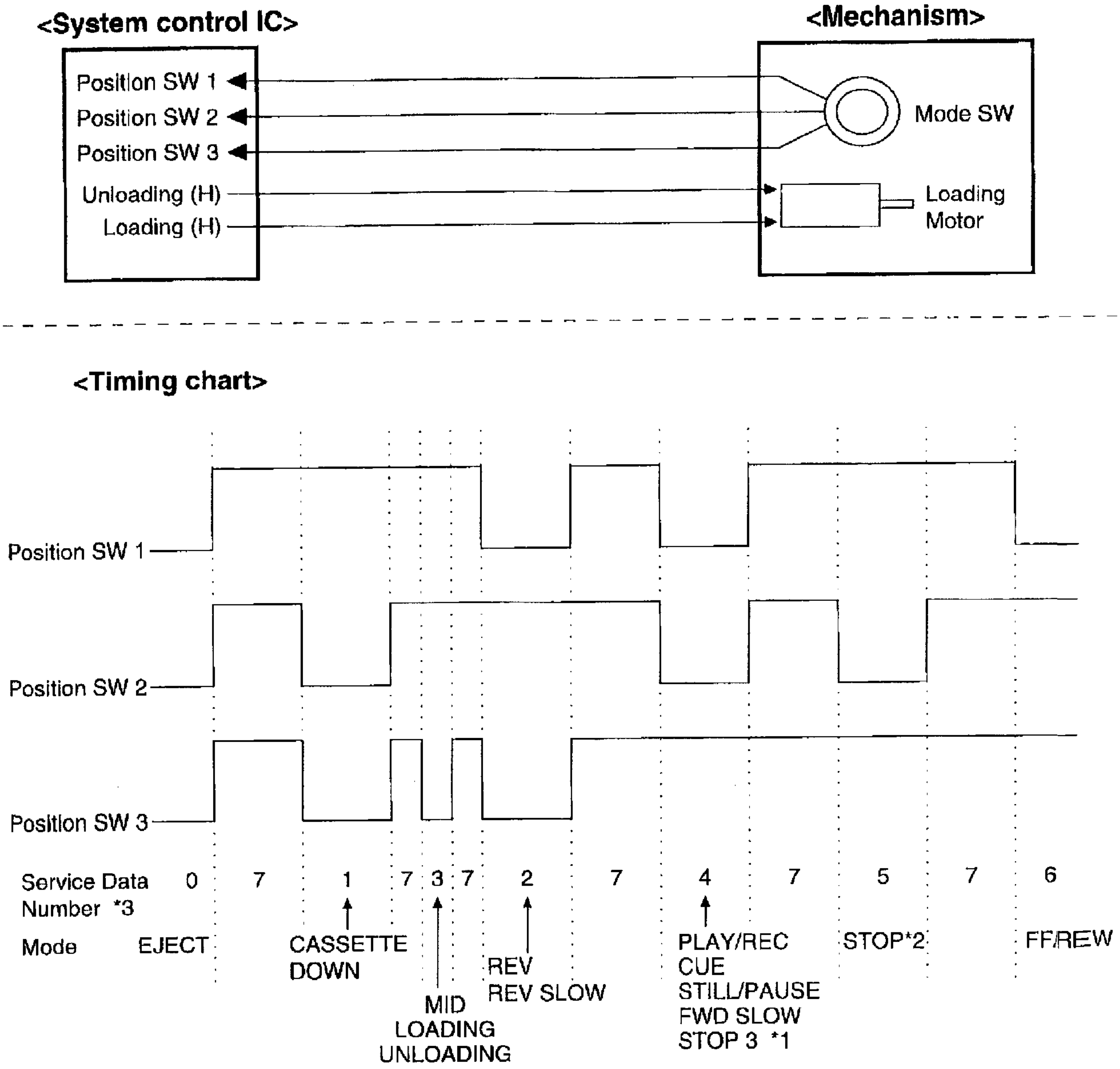
Service Mode Number	Note for checking Service Data Numbers	Service Data Numbers	Indication	Remarks
1	—	00	No light detected at either sensor	Tape not required.
		01	Tape beginning Light to Supply photo sensor is blocked.	
		02	Tape end Light to Take-up photo sensor is blocked.	
		03	Light detected at both sensors.	
2	—	00	EJECT	Tape required *1. STOP3: Pintch roller is on Capstan motor shaft. *2. STOP: Pintch roller is off Capstan motor shaft.
		01	Cassette down	
		02	REV, REV SLOW	
		03	Loading/Unloading	
		04	PLAY, REC, STILL, PAUSE, CUE, FWD SLOW, STOP3*1	
		05	STOP*2	
		06	FF/REW	
		07	Intermediate position	
3	Disregard service data displayed until mechanism operation is completed. Then the display should indicate "00".	00	Any display other than "00" indicates a fault in the mode switch circuit or system.	Tape required.
4	Display only when the operating button is pressed.			Tape not required.
5	Left digit only, disregard Right digit display.	8 1 Left Right Digit Digit	8, 9, u, A, —, n, L and no display indicate that the Capstan motor "PLAY" command received by System control microprocessor.	Tape required. If a symbol other than those listed is displayed, a mulfunction in that circuit is indicated.
	Right digit only, disregard left digit dispaly.	8 7 Left Right Digit Digit	1, 2, 3, 4, 5, 6, 7 indicate that the Capstan motor "CUE, FF, FWD SLOW" commands received by system control microprocessor.	
	Right digit only, disregard left digit display.	8 — Left Right Digit Digit	8, 9, u, A, —, n, L and no display indicate that the Capstan motor "Reverse, REW, Reverse Slow" commands received by system control microprocessor.	
6	Left digit only, disregard Right digit display.	1 0 Left Right Digit Digit	1, 3, 5, 7, 9, A, n and no display indicate that the cylinder motor "ON" command received by system control microprocessor.	Tape required. If a symbol other than those listed is displayed, a mulfunction in that circuit is indicated.

Fig. D5 Service Data Display and Indication

7-6. Timing chart from Mode SW to System control IC

System control IC senses the mechanical position through the Mode SW.

Fig. D6 shows the timing for service mode number 2.


<System control IC>
<Mechanism>
Position SW 1
Position SW 2
Position SW 3
Unloading (H)
Loading (H)
Mode SW
Loading Motor
<Timing chart>
Position SW 1
Position SW 2
Position SW 3
Service Data Number *3
0
7
1
7
3
7
2
7
4
7
5
7
6
Mode
EJECT
CASSETTE DOWN
MID
LOADING
UNLOADING
REV
REV SLOW
PLAY/REC
CUE
STILL/PAUSE
FWD SLOW
STOP 3 *1
STOP*2
FF/REW

*1 : Stop 3 ;The Pinch roller is on the Capstan motor shaft.

*2 : Stop ;The Pinch roller is off the Capstan motor shaft.

*3 : Service Data Number; This is for Service Mode Number 2.

Fig. D6 Timing chart of Mode SW

8. SYSTEM CONTROL CIRCUIT & MECHANISM CONTROL CIRCUIT

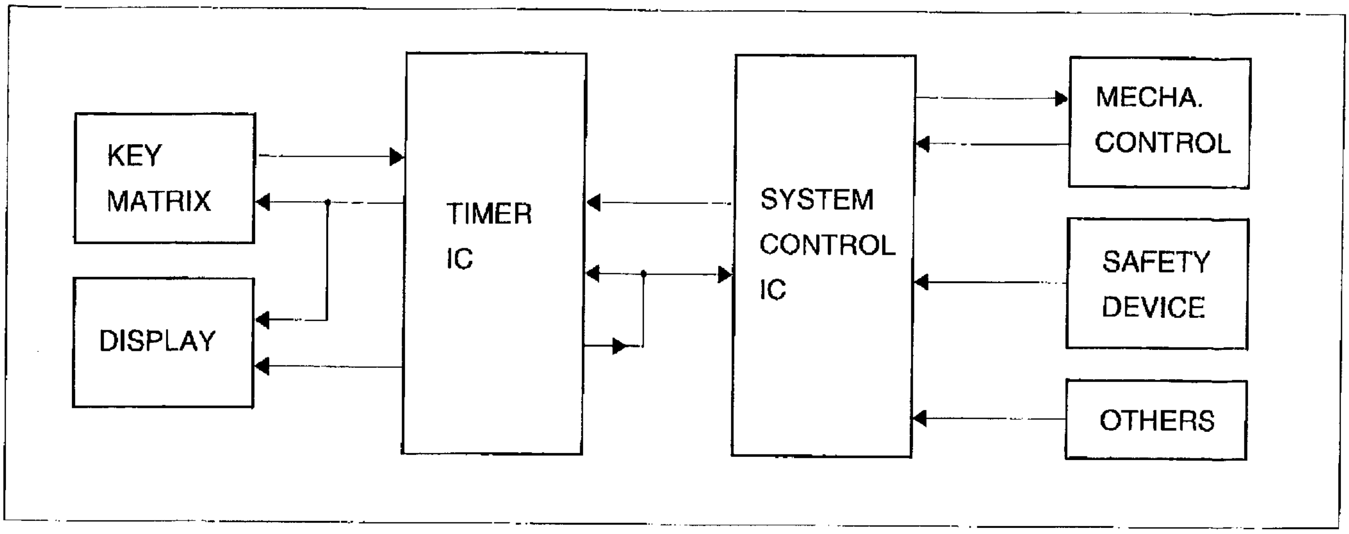


Fig. S1 Overall Block Diagram of System Control Circuit

8-1. STOP3 Specification

(1) The STOP3 is the playback stand-by mode.

(2) The unit is put into the STOP3 position after tape loading if the cassette tape does not have a clear leader tape.

(3) If the unit is in the STOP3 position when the power is switched off (included the Timer stand-by mode), the unit goes to the STOP position.

(4) If the cassette is in the unit when the power is turned on, the unit goes to the STOP3 position.

(5) When the cassette tape has clear leader tape, the unit is in loading mode after winding up the clear leader tape by Take-up reel at the cassette down position and the unit goes to STOP3 position.

8-2. Stand-by in the STOP3 position

(1) The unit goes to STOP3 position when the Stop mode is selected during the Play or Rec operations. The unit then loosens the tape tension by performing the Reverse Slow.
The Reverse Slow corresponds to the FG 40 pulses of the capstan (irrespective of SP/LP modes). The cylinder continues to rotate.

(2) After about 5 minutes in STOP3 mode, the unit shifts to the Stop position and then the unit stops the cylinder rotation.

8-3. Supply and Take-up Sensors

Supply and Take-up photo transistors are used to sense the beginning and end of a tape. The tape has transparent leaders at the beginning and end.

When these transparent leaders enter the tape transport path, they allow infrared light from the sensor LED to reach either one of the tape end sensors (photo-transistor).

If the Take-up end sensor detects the light, the microprocessor SYSTEM CONTROL IC places the VCR in the Stop mode and then performs a short Cue.

If the Supply end sensor is triggered, the microprocessor activates the Stop mode and the Rewind mode. The Rewind mode continues until the Take-up end sensor detects the end of the tape. The tape beginning is detects by a low signal at SYSTEM CONTROL IC Take-up photo terminal. The tape end is detected by a low signal at SYSTEM CONTROL IC Supply photo terminal.

If the light is received at both sensors at same time, the cassette is ejected.

<Operation after detecting the beginning and the end of tape>

Mode	Detection of the beginning	Detection of the end
Power off→on	Short CUE	Short REW
Cassette in	Short CUE	Short REW
Loading	Short CUE	Short REW
FF/CUE	—	Auto REW
REW/REV	Short CUE	—
PLAY, REC	—	Auto REW
Timer REC	—	Power off

Both ends of tape detection (tape cut, no cassette),

(1) Cassette in: The cassette tape is ejected

(2) Other mode: The unit goes to Stop mode and it is impossible to operate except EJECT key.

(3) Timer REC: Power is turned off after short CUE is performed.

8-4. Safety Tab Switch

A recorded video cassette can be protected against accidental erasure by breaking off the tab on the cassette. The cassette can now only be used for playback. To be able to record on the cassette, cover the hole with adhesive tape. If the safety tab on the cassette has been removed, Safety Tab Switch is off (open) and high signal is supplied to SYSTEM CONTROL IC Safety Tab terminal. The SYSTEM CONTROL IC will not go into the recording mode and automatically places the VCR in the playback mode.

8-5. Dew Sensor

If excessive moisture or condensation is present inside the machine (an internal humidity of more than 98%) the unit will stop if running. Until the moisture level decreases only the Eject mode will operate. To sense the humidity, a dew sensor is used. The sensor is a special variable resistor which change resistance with ambient humidity.

The sensor ranges in resistance from about 5K ohm at 90% humidity to about 50K omh at 98% humidity. Normally, the voltage across the sensor is low because of its low resistance.

But if moisture condenses inside the unit, the SYSTEM CONTROL IC voltage of Dew terminal increases to indicate a Dew condition.

Tape	Mode	Dew sensor ON	Dew sensor OFF
OUT	Power	Compulsory Power on	Power off
	Dew indication	Indicate "d" and "U10"	Normal indication
	Cylinder	Rotating *1	Stop
	Key operation	Not possible *2	Possible
	Cassette in	Immediately a cassette is ejected after it goes to cassette down position.	Possible
IN	Power	Compulsory Power on	Power off
	Dew indication	Indication "d" and "U10"	Normal indication
	Cylinder	Rotating *1	Stop
	Key operation	Not possible *2	Possible
	Cassette condition	A cassette goes to down position and is in stand-by mode.	Stand-by mode at STOP3 position.

*1: When the cylinder locks in dew mode, it will be released until dew sensor is truned off.

*2: The keys which do not relate to the tape running operation, are able to be used.

Dew sensor on:	During Dew formation is detected and 80 minutes after completion of Dew detection.
Dew sensor off:	80 minutes later after copmletion of Dew detection.

8-6. Setting time for each mode

The time is set on each mode in order to protect tape and capstan driver. When the setting time is over, the mode is gone to the next mode.

Mode	Setting time	Switching mode
STILL, PAUSE	Approximately 5 minutes	STOP
CUE/REV lock	Approximately 10 minutes	PLAY
SLOW	Approximately 10 minutes	STOP

8-7. Operation of short CUE

Short CUE stops when the Take-up photo sensor detects the black portion of the tape.

However its sensor does not detect the black portion within 4.0±1.0 sec., the mode except Power on/off and Eject modes will be abe to be operated after the unit stops. This is same as the timer over operation of the reel lock.

8-8. Loading/Unloading Mechanism lock

Loading and unloading times are set, and in case the mechanism locks during loading or unloading operation within the defined time, the unit detects the mechanism lock and loading motor reverses or stops.

Loading operation lock:	Cassette tape is unloaded and ejected within 5 seconds.
Unloading operation lock:	Power is truned off within 5 seconds.

8-9. Cassette loading/unloading lock

(1) Mechanism locks during the cassette in operation.

① Cassette tape is ejected approximately 2 seconds later when the mechanism locks during the cassette in operation.

② In case mechanism locks during eject operation, cassette tape is inserted and power is turned off approximately 2 seconds later.

③ When Mechanism locks during cassette in operation, power is turned off approximately 2 seconds.

In case the mechanism lock is released on the way and cassette is ejected, the unit continues the normal operation.

(2) Mechanism locks during the eject operation.

① Cassette tape goes to cassette down position approximately 2 seconds later and power is turned off when mechanism locks during eject operation.

② Mechanism locks during cassette down operation, power is turned off.

8-10. Reel lock operation

When the Suuply or Take-up reel mechanism locks during the tape running, the following operation is performed in order to protect the tape and the capstan driver.

In case of Take-up reel mechanism lock, the detecting time is defined depending on the mechanism position and capstan speed to minimize the tape supplying from supply side.

FF/REW :	Unloading and loading. The unit goes to CUE/REV mode.
PLAY/CUE/REV :	Unloading till the cassette down position and loading. The unit goes to STOP3 position.

In play and CUE/REV mode, the reel pulse cycle is started to count after the mechanism mode is fixed.

In case the counted pulse cycle exceeds the defined value, the unit goes to STOP mode due to judge that lock of reel mechanism is detected.

<The value of reel lock detection time>

NTSC/SP mode

Mode	Speed (Ratio)	Time (S)
PLAY	±1	3.5
CUE/REV	±2.5	1.6

PAL/SP mode

Mode	Speed (Ratio)	Time (S)
PLAY	±1	3.5
CUE/REV	±2.5	1.6

In FF/REW mode, the unit goes to CUE/REV mode and continues the tape running in the following case.

1. (1) Take-up reel pulse can not be detected within 5 seconds after the unit shifted to REW mode.
   (2) Supply reel pulse can not be detected within 5 seconds after the unit shifted to FF mode.
2. The reel pulse can not be detected more than 2 seconds sequentially within 5 seconds after completing the mechanism mode shift.
3. The reel pulse can not be detected more than 800 msec. past 5 seconds after completing the mechanism mode shift.

8-11. Cylinder lock

<Start rotation>

When the cylinder neither start rotating nor go to the stability rotation within 5 seconds, it is unloading under keeping the mode. In case the cylinder starts rotating and goes to the stability rotation, the mechanism loads again and continues the holding mode.

If it is not possible, Power is turned off and cylinder trouble "H01" is displayed.

<During rotation>

The head switching pulse is supplied to the cylinder when the cylinder starts the stable revolution. In case the head switching pulse does not come to the cylinder within 0.5 seconds, the cylinder lock is judged and the following operation is activated.

Timer REC mode: Power off

PLAY, REC mode: STOP (Mechanism shifts to MID. position and the unit goes to stand-by mode.)

8-12. Mode transition

The relation between the present mode and operation key is shown in the following table.

PRESET MODE	OPERATION KEY							
	P SW	EJECT	STOP	REW	FF	PLAY	PAUSE	REC
P-OFF	P-ON	EJECT	—	—	—	PLAY	—	—
EJECT	P-OFF	—	—	—	—	—	—	—
STOP	P-OFF	EJECT	*3	REW	FF	PLAY	—	REC
REW	P-OFF	EJECT	STOP	REV	FF	PLAY	—	—
FF	P-OFF	EJECT	STOP	REW	CUE	PLAY	—	—
REV	P-OFF	EJECT	STOP	—	*1	PLAY	*2	—
CUE	P-OFF	EJECT	STOP	*1	—	PLAY	*2	—
PLAY	P-OFF	EJECT	STOP	*1	*1	—	*2	—
STILL	P-OFF	EJECT	STOP	*1	*1	PLAY	PLAY	REC PS
REC	P-OFF	—	STOP	—	—	—	REC PS	—
REC/PS	P-OFF	—	STOP	—	—	—	REC	REC

Pressing two keys simultaneously, the key operation is going to be ineffective.

*1: The unit goes to CUE/REV lock mode by pressing FF/REW key lightly (less than 0.7 seconds) during Play, still and REV mode. CUE/REV mode will be returned previous mode when FF/REW key is pressed more than 0.7 seconds.

*2: In case PAUSE key is pressed less than 1 second other than STILL mode, the unit goes to STILL mode.

If PAUSE key is being held to press, the unit goes to STILL mode and then goes to 1/10 SLOW mode after 1 second. SLOW mode has not been set in 2 Head LP mode model.

*3: When STOP key is pressed more than 3 seconds while a cassette tape is in the unit, the cassette tape is ejected.

8-13. Power on reset

When the power is turned on, the unit is going to reset and the following datas are cleared.

(1) Position switch data
(2) Operation mode data
(3) Prohibition flags

In case the mechanism is in cassette down position, tape slack is removed as the initial operation and the unit goes to STOP3 position.

8-14. Linear time counter operation

The counter value will be gone up/down by counting control pulse. As for NTSC system during Play/Rec mode, counter value goes up/down every 30 pulses. As for PAL system during Play/Rec mode, counter value goes up/down every 25 pulses.

8-15. Tape speed in CUE/REV mode

	CUE/REV mode		Hyper-search mode	
MODE	NTSC	PAL	NTSC	PAL
SP mode	9 times	11 times	9 times	11 times
EP or LP mode	11 times	11 times	29 times	19 times

8-16. Automatic functions

(1) Automatic Power on

① Under power off, when a cassette tape is inserted, power is turned on automatically and cassette tape is loaded.

② Under power off and a cassette tape has been inserted, when PLAY key is pressed, power is turned on automatically and goes to PLAY mode.

(2) Automatic play

When a cassette tape removed safety tab is inserted, the mode goes into Play mode.

(3) Automatic rewind

When tape running is reached to the end of tape, automatically goes to Rew mode and stops when tape running will be reached to the beginning of tape.

In case of Timer recording, short Rew is performed for 2 seconds and power is turned off when tape running is reached to the end of tape.

(4) Power off and Eject

Under power off and a cassette tape has been inserted, when Eject key is pressed, a cassette tape is ejected and power is turned off.

8-17. CUE/REV lock mode

When FF/REW key is pressed lightly (less than 0.7 seconds) during Play, STILL and REV mode, unit goes into CUE/REV mode. To release CUE/REV mode, FF/REW key should be pressed more than 0.7 seconds.

8-18. Hyper-search mode

When FF/REW key is pressed during FF/REW mode, unit goes into CUE/REV mode.

This mode is activated while keeping FF/REW key pressed.

When releasing FF/REW key pressed, this mode is released.

8-19. FF/REW speed

Maximum tape speed is approximately 4.5 m/s during the stable running.

8-20. FF/REW time

The tape running from the beginning to the end of T-120 type (E-180 type) cassette tape isable to be completed within 90 seconds.